

## SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: TRW-NR, DVC Examiner #: 69332 Date: 6/31/01  
Art Unit: 1711 Phone Number 308-2437 Serial Number: 09/622/92  
Mail Box and Bldg/Room Location: 3/AD29 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: \_\_\_\_\_

Inventors (please provide full names): \_\_\_\_\_

Earliest Priority Filing Date: \_\_\_\_\_

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Structure (I) of claim 1 with one substituted episode of structure (II) or (III) or IV. Shanks

\*\*\*\*\*  
STAFF USE ONLYSearcher: X. Fuller

## Type of Search

NA Sequence (#) \_\_\_\_\_

## Vendors and cost where applicable

STN: ✓

Searcher Phone #: \_\_\_\_\_

AA Sequence (#) \_\_\_\_\_

Dialog \_\_\_\_\_

Searcher Location: \_\_\_\_\_

Structure (#) 2

Questel/Orbit \_\_\_\_\_

Date Searcher Picked Up: \_\_\_\_\_

Bibliographic \_\_\_\_\_

Dr. Link \_\_\_\_\_

Date Completed: 11/5/01

Litigation \_\_\_\_\_

Lexis/Nexis \_\_\_\_\_

Searcher Prep & Review Time: 20

Fulltext \_\_\_\_\_

Sequence Systems \_\_\_\_\_

Clerical Prep Time: \_\_\_\_\_

Patent Family \_\_\_\_\_

WWW/Internet \_\_\_\_\_

Online Time: 58

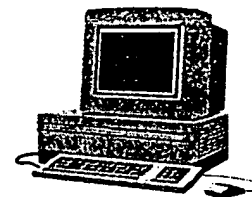
Other \_\_\_\_\_

Other (specify) \_\_\_\_\_

# EIC1700

## Search Results

### Feedback Form (Optional)



Scientific & Technical Information Center

The search results generated for your recent request are attached. If you have any questions or comments (compliments or complaints) about the scope or the results of the search, please contact *the EIC searcher* who conducted the search *or contact*:

Kathleen Fuller, Team Leader, 308-4290, CP3/4 3D62

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#### *Voluntary Results Feedback Form*

➤ *I am an examiner in Workgroup:*

*Example:*

➤ *Relevant prior art found, search results used as follows:*

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

*Types of relevant prior art found:*

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature  
(journal articles, conference proceedings, new product announcements etc.)

➤ *Relevant prior art not found:*

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Search results were not useful in determining patentability or understanding the invention.

**Other Comments:**

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Drop off completed forms in CP3/4 - 3D62 .

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DICTIONARY FILE UPDATES: 4 NOV 2001 HIGHEST RN 366781-46-6

TSCA INFORMATION NOW CURRENT THROUGH July 7, 2001

Please note that search-term pricing does apply when  
conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER see  
HELP CROSSOVER for details.

Calculated physical property data is now available. See HELP PROPERTIES  
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<http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf>

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FILE COVERS 1947 - 5 Nov 2001 VOL 135 ISS 20  
FILE LAST UPDATED: 4 Nov 2001 (20011104/ED)

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information and abstracts were added for over 2.2 million references  
published in CA from 1947 to 1966.

=> D QUE

L4 274951 SEA FILE=REGISTRY ABB=ON LNTH/PG  
L5 5484 SEA FILE=REGISTRY ABB=ON ((LNTH/PG OR Y OR SC) (L)C(L)H(L)O)/EL  
S(L)4-6/ELC.SUB  
L6 70044 SEA FILE=REGISTRY ABB=ON (C(L)H(L)O)/ELS(L)L4  
L7 62673 SEA FILE=REGISTRY ABB=ON L6(L)4-6/ELC.SUB  
L8 21267 SEA FILE=HCAPLUS ABB=ON L7 OR L5  
L9 2085 SEA FILE=HCAPLUS ABB=ON L8(L)CAT/RL  
L10 159 SEA FILE=HCAPLUS ABB=ON L9 AND RING?(3A)?OPEN?  
L11 28 SEA FILE=HCAPLUS ABB=ON L10 AND ?EPOX?

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L12 20 SEA FILE=HCAPLUS ABB=ON L10 AND ?OXIRAN?  
 L13 9 SEA FILE=HCAPLUS ABB=ON L10 AND ETHYLENE OXIDE  
 L14 40 SEA FILE=HCAPLUS ABB=ON (L11 OR L12 OR L13)  
 L15 2 SEA FILE=HCAPLUS ABB=ON L14 AND ?POLYETHER?  
 L16 10 SEA FILE=HCAPLUS ABB=ON L10 AND ?POLYETHER?  
 L17 24 SEA FILE=HCAPLUS ABB=ON (L14 OR L16) AND (POLYMER? OR  
 PLASTIC?)/SC,SX  
 L18 24 SEA FILE=HCAPLUS ABB=ON L15 OR L17  
 L19 5 SEA FILE=HCAPLUS ABB=ON L10 AND ALKYLENE OXIDE#  
 L20 5 SEA FILE=HCAPLUS ABB=ON L19 AND (POLYMER? OR PLASTIC?)/SC,SX  
 L21 26 SEA FILE=HCAPLUS ABB=ON L18 OR L20  
 L23 158577 SEA FILE=REGISTRY ABB=ON 1.30.1/RID - *ring identifier for*   
 L24 208477 SEA FILE=HCAPLUS ABB=ON L23  
 L25 52 SEA FILE=HCAPLUS ABB=ON L10 AND L24  
 L26 4 SEA FILE=HCAPLUS ABB=ON L25 AND ?POLYETHER?  
 L27 29 SEA FILE=HCAPLUS ABB=ON L25 AND (POLYMER? OR PLASTIC?)/SC,SX  
 L28 38 SEA FILE=HCAPLUS ABB=ON L21 OR L26 OR L27

=> D L28 1-38 ALL HITSTR

L28 ANSWER 1 OF 38 HCAPLUS COPYRIGHT 2001 ACS

AN 2001:124217 HCAPLUS

DN 134:178969

TI **Ring-opening** polymerization of substituted  
**epoxides** using rare earth complexes and reaching high  
 polymerization degree

IN Kawamukai, Hiroshi; Miyanaga, Seiichi; Oda, Takashi

PA Kao Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C08G065-12

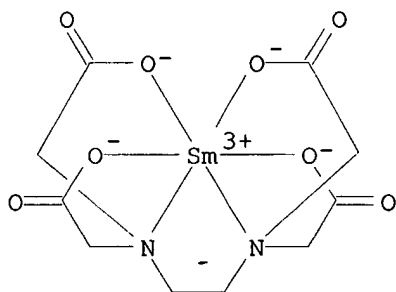
CC 35-3 (Chemistry of Synthetic High **Polymers**)

Section cross-reference(s): 29, 37, 78

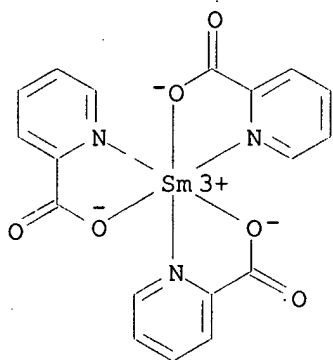
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001048974	A2	20010220	JP 1999-229634	19990816
AB	Substituted <b>epoxides</b> excluding propylene oxide and epihalohydrins are polymd. in the presence of rare earth complexes and organometallic reductants therefor. Thus, a poly(cetyl glycidyl ether) with Mn 100,000 was obtained by use of acetylacetonato(tetraphenylporphyrin- ato)samarium and Me aluminoxane as a catalyst system.				
ST	samarium complex catalyzed substituted <b>epoxide</b> polymn; methylaluminoxane reducible rare earth complex catalyst; cetyl glycidyl ether high polymn degree				
IT	Aluminoxanes RL: CAT (Catalyst use); USES (Uses) (Me; <b>ring-opening</b> polymn. of substituted <b>epoxides</b> using rare earth complexes and reaching high polymn. degree)				
IT	Polymerization catalysts ( <b>ring-opening</b> polymn. of substituted <b>epoxides</b> using rare earth complexes and reaching high polymn. degree)				
IT	Organometallic compounds Rare earth complexes RL: CAT (Catalyst use); USES (Uses)				

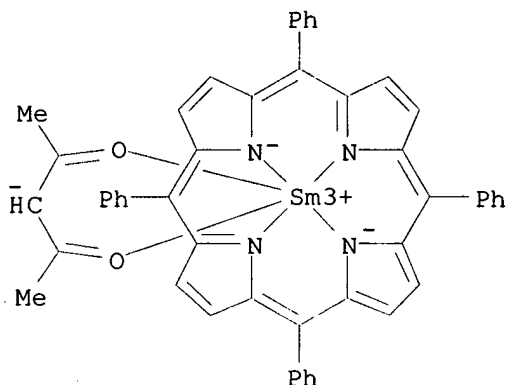
- (ring-opening polymn. of substituted epoxides using rare earth complexes and reaching high polymn. degree)
- IT Polyoxyalkylenes, preparation  
 RL: IMF (Industrial manufacture); PRP (Properties); PREP (Preparation)  
 (ring-opening polymn. of substituted epoxides using rare earth complexes and reaching high polymn. degree)
- IT 12611-57-3 26846-33-3 61301-65-3,  
 (Acetylacetonato)(tetraphenylporphyrinato)samarium 130725-34-7,  
 Bromo(tetraphenylporphyrinato)cerium  
 RL: CAT (Catalyst use); USES (Uses)  
 (ring-opening polymn. of substituted epoxides using rare earth complexes and reaching high polymn. degree)
- IT 31740-69-9P  
 RL: IMF (Industrial manufacture); PRP (Properties); PREP (Preparation)  
 (ring-opening polymn. of substituted epoxides using rare earth complexes and reaching high polymn. degree)
- IT 12611-57-3 26846-33-3 61301-65-3,  
 (Acetylacetonato)(tetraphenylporphyrinato)samarium  
 RL: CAT (Catalyst use); USES (Uses)  
 (ring-opening polymn. of substituted epoxides using rare earth complexes and reaching high polymn. degree)
- RN 12611-57-3 HCAPLUS  
 CN Samarate(1-), [[N,N'-1,2-ethanediylbis[N-[(carboxy-.kappa.O)methyl]glycinato-.kappa.N,.kappa.O]](4-)]-, hydrogen, (OC-6-21)-(9CI) (CA INDEX NAME)



- RN 26846-33-3 HCAPLUS  
 CN Samarium, tris(2-pyridinecarboxylato-.kappa.N1,.kappa.O2)- (9CI) (CA INDEX NAME)



RN 61301-65-3 HCAPLUS  
 CN Samarium, (2,4-pentanedionato-.kappa.O,.kappa.O') [5,10,15,20-tetraphenyl-21H,23H-porphinato(2-)-.kappa.N21,.kappa.N22,.kappa.N23,.kappa.N24]- (9CI)  
 (CA INDEX NAME)

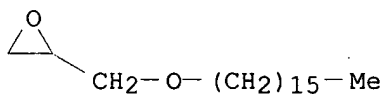


IT 31740-69-9P  
 RL: IMF (Industrial manufacture); PRP (Properties); PREP (Preparation)  
 (ring-opening polymn. of substituted  
 epoxides using rare earth complexes and reaching high polymn.  
 degree)

RN 31740-69-9 HCAPLUS  
 CN Oxirane, [(hexadecyloxy)methyl]-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 15965-99-8  
 CMF C19 H38 O2



L28 ANSWER 2 OF 38 HCAPLUS COPYRIGHT 2001 ACS  
 AN 2001:111769 HCAPLUS

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DN 134:131940  
 TI Process for preparing high-molecular-weight aliphatic polycarbonates  
 IN Zhao, Xiaojang; Liu, Binyuan; Wang, Xianhong; Zhao, Daqing; Wang, Fusong  
 PA Changchun Inst. of Applied Chemistry, Chinese Academy of Sciences, Peop.  
 Rep. China  
 SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 5 pp.  
 CODEN: CNXXEV  
 DT Patent  
 LA Chinese  
 IC ICM C08G064-02  
 ICS C08G064-34  
 CC 35-3 (Chemistry of Synthetic High Polymers)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 1257885	A	20000628	CN 1998-125655	19981224
AB	<b>Epoxides</b> react with CO <sub>2</sub> in solns. contg. rare earth compds. and organometallic compds. to prep. polycarbonates. Thus, propylene oxide and CO <sub>2</sub> were polymd. in a soln. contg. Y trichloroacetate-ZnEt <sub>2</sub> -glycerol to prep. a polycarbonate.				
ST	polycarbonate carbon dioxide <b>epoxide</b> copolymer; catalyst polymn yttrium zinc glycerol				
IT	Rare earth compounds RL: CAT (Catalyst use); USES (Uses) (catalysts contg. rare earth compds. and organometallic compds. for polymn. of carbon dioxide and <b>epoxides</b> )				
IT	Polycarbonates, preparation RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process) (catalysts contg. rare earth compds. and organometallic compds. for polymn. of carbon dioxide and <b>epoxides</b> )				
IT	Ethers, uses RL: NUU (Nonbiological use, unclassified); USES (Uses) (cyclic; catalysts contg. rare earth compds. and organometallic compds. for polymn. of carbon dioxide and <b>epoxides</b> )				
IT	Alcohols, uses RL: CAT (Catalyst use); USES (Uses) (polyhydric; catalysts contg. rare earth compds. and organometallic compds. for polymn. of carbon dioxide and <b>epoxides</b> )				
IT	<b>Epoxides</b> RL: IMF (Industrial manufacture); POF (Polymer in formulation); PREP (Preparation); USES (Uses) (polymers with carbon dioxide; catalysts contg. rare earth compds. and organometallic compds. for polymn. of carbon dioxide and <b>epoxides</b> )				
IT	Polymerization catalysts (ring-opening; catalysts contg. rare earth compds. and organometallic compds. for polymn. of carbon dioxide and <b>epoxides</b> )				
IT	56-81-5, Glycerol, uses 57-55-6, 1,2-Propanediol, uses 107-21-1, Ethylene glycol, uses 112-27-6, Triethylene glycol 112-60-7, Tetraethylene glycol 504-63-2, 1,3-Propanediol 557-20-0, Diethylzinc 20101-72-8, Yttrium dichloroacetate 20101-73-9, Yttrium trichloroacetate 29770-44-3, Neodymium trifluoroacetate RL: CAT (Catalyst use); USES (Uses) (catalysts contg. rare earth compds. and organometallic compds. for polymn. of carbon dioxide and <b>epoxides</b> )				
IT	25511-85-7P, Carbon dioxide-propylene oxide copolymer 25608-11-1P, Carbon dioxide-ethylene oxide copolymer				

RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)  
(catalysts contg. rare earth compds. and organometallic compds. for polymn. of carbon dioxide and **epoxides**)

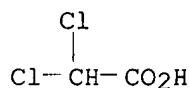
IT 20101-72-8, Yttrium dichloroacetate 20101-73-9, Yttrium trichloroacetate 29770-44-3, Neodymium trifluoroacetate

RL: **CAT (Catalyst use)**; USES (Uses)

(catalysts contg. rare earth compds. and organometallic compds. for polymn. of carbon dioxide and **epoxides**)

RN 20101-72-8 HCAPLUS

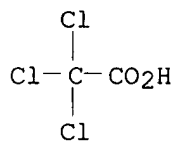
CN Acetic acid, dichloro-, yttrium(3+) salt (8CI, 9CI) (CA INDEX NAME)



1/3 Y(III)

RN 20101-73-9 HCAPLUS

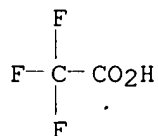
CN Acetic acid, trichloro-, yttrium(3+) salt (8CI, 9CI) (CA INDEX NAME)



1/3 Y(III)

RN 29770-44-3 HCAPLUS

CN Acetic acid, trifluoro-, neodymium(3+) salt (8CI, 9CI) (CA INDEX NAME)



1/3 Nd(III)

IT 25511-85-7P, Carbon dioxide-propylene oxide copolymer  
25608-11-1P, Carbon dioxide-**ethylene oxide** copolymer

RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)

(catalysts contg. rare earth compds. and organometallic compds. for polymn. of carbon dioxide and **epoxides**)

RN 25511-85-7 HCAPLUS

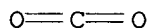


CN Oxirane, methyl-, polymer with carbon dioxide (9CI) (CA INDEX NAME)

CM 1

CRN 124-38-9

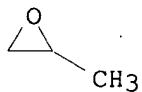
CMF C O2



CM 2

CRN 75-56-9

CMF C3 H6 O



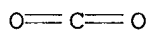
RN 25608-11-1 HCAPLUS

CN Oxirane, polymer with carbon dioxide (9CI) (CA INDEX NAME)

CM 1

CRN 124-38-9

CMF C O2



CM 2

CRN 75-21-8

CMF C2 H4 O



L28 ANSWER 3 OF 38 HCAPLUS COPYRIGHT 2001 ACS

AN 2000:719632 HCAPLUS

DN 134:56988

TI **Ring-opening** polymerization of styrene oxide with rare earth coordination catalysts

AU Ge, L.; Huang, Q.; Zhang, Y.; Shen, Z.

CS Department of Polymer Science and Engineering, Zhejiang University, Hangzhou, 310027, Peop. Rep. China

SO Eur. Polym. J. (2000), 36(12), 2699-2705

CODEN: EUPJAG; ISSN: 0014-3057

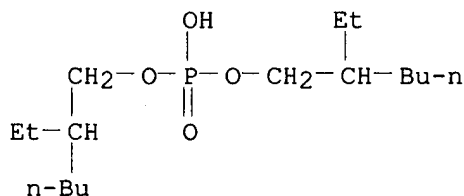
PB Elsevier Science Ltd.

DT Journal

LA English

- CC 35-3 (Chemistry of Synthetic High Polymers)
- AB **Ring-opening** polymn. of styrene oxide was successfully carried out by using new rare earth catalytic systems for the first time. It was found that trinary rare earth coordination catalysts composed of neodymium 2-ethylhexyl phosphonate or calix[6]arene-neodymium, triisobutylaluminum and 2-ethylhexyl phosphonate are effective catalysts for the **ring-opening** polymn. of styrene oxide. The dependence of polymn. on molar ratio of catalyst components (Al/Nd), solvent, polymn. temp. and time has been investigated. The polymers were characterized by IR, 1H-NMR, 13C-NMR and GPC.
- ST **ring opening** polymn styrene oxide; rare earth catalyst  
polymn styrene oxide; neodymium polymn catalyst styrene oxide; aluminum triisobutyl polymn catalyst styrene oxide; phosphonate polymn catalyst styrene oxide
- IT Solvent effect  
(on **ring-opening** polymn. of styrene oxide with neodymium-triisobutylaluminum-ethylhexyl phosphonate catalyst)
- IT **Polyethers**, preparation  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(**ring-opening** polymn. of styrene oxide with neodymium-triisobutylaluminum-ethylhexyl phosphonate catalyst)
- IT Polymerization catalysts  
(**ring-opening; ring-opening** polymn. of styrene oxide with neodymium-triisobutylaluminum-ethylhexyl phosphonate catalyst)
- IT 100-99-2, Triisobutylaluminum, uses 298-07-7, P204 7440-00-8D, Neodymium, calix[6]arene compds. **38326-04-4**, Neodymium tris[(bis(2-ethylhexyl) phosphate] 96107-95-8D, Calix[6]arene, neodymium compds.  
RL: **CAT (Catalyst use); USES (Uses)**  
(catalysts; **ring-opening** polymn. of styrene oxide with neodymium-triisobutylaluminum-ethylhexyl phosphonate catalyst)
- IT **25189-69-9P**, Poly(styrene oxide) 101062-46-8P, Poly[oxy(phenyl-1,2-ethanediyl)]  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(**ring-opening** polymn. of styrene oxide with neodymium-triisobutylaluminum-ethylhexyl phosphonate catalyst)
- RE.CNT 17
- RE
- (1) Allen, G; Polymer 1969, V8, P385
  - (2) Allen, G; Polymer Lond 1967, V8, P391 HCAPLUS
  - (3) Colclough, R; J Polym Sci 1959, V34, P171 HCAPLUS
  - (4) Heatley, F; Eur Polym J 1991, V27(6), P471 HCAPLUS
  - (5) Jedlinski, Z; Makromol Chem 1982, V183, P587 HCAPLUS
  - (6) Kasperczyk, J; Makromol Chem 1986, V187, P2215 HCAPLUS
  - (7) Kern, R; Makromol Chem 1965, V81, P261 HCAPLUS
  - (8) Ouyang, J; Collection of synthetic rubber catalyzed by rare earth catalysts 1980, P113
  - (9) Rabagliati, F; Eur Polym J 1987, V23(1), P63 HCAPLUS
  - (10) Sepulchre, M; Makromol Chem 1988, V189, P2485 HCAPLUS
  - (11) Seung, S; J Polym Sci Polym Lett Ed 1980, V18, P89 HCAPLUS
  - (12) Shen, Z; J Zhejiang University 1987, V21(5), P114 HCAPLUS
  - (13) Tsuruta, T; Makromol Chem 1968, V111, P236 HCAPLUS
  - (14) Wu, J; J Polym Sci Polym Chem Ed 1990, V28, P1995 HCAPLUS
  - (15) Wu, J; Polym J 1990, V22, P283 HCAPLUS
  - (16) Wu, J; Polym J 1990, V22, P326 HCAPLUS
  - (17) Zhang, Y; Inorganica Chimica 1989, V155, P263 HCAPLUS
- IT **38326-04-4**, Neodymium tris[(bis(2-ethylhexyl) phosphate]  
RL: **CAT (Catalyst use); USES (Uses)**  
(catalysts; **ring-opening** polymn. of styrene oxide)

with neodymium-triisobutylaluminum-ethylhexyl phosphonate catalyst)  
 RN 38326-04-4 HCAPLUS  
 CN Phosphoric acid, bis(2-ethylhexyl) ester, neodymium(3+) salt (9CI) (CA INDEX NAME)



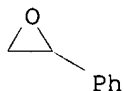
● 1/3 Nd(III)

IT 25189-69-9P, Poly(styrene oxide)  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (ring-opening polymn. of styrene oxide with  
 neodymium-triisobutylaluminum-ethylhexyl phosphonate catalyst)  
 RN 25189-69-9 HCAPLUS  
 CN Oxirane, phenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 96-09-3

CMF C8 H8 O



L28 ANSWER 4 OF 38 HCAPLUS COPYRIGHT 2001 ACS  
 AN 2000:419451 HCAPLUS  
 DN 133:150965  
 TI Anionic ring opening polymerization of oxygenated  
 heterocycles with supported zirconium and rare earths alkoxides as  
 initiators in protic conditions. Towards a catalytic heterogeneous process  
 AU Miola-Delaite, Christelle; Colomb, Erwan; Pollet, Eric; Hamaide, Thierry  
 CS Laboratoire de Chimie et Procédés de Polymérisation, C.N.R.S., ESCPE Lyon,  
 Villeurbanne, 69616, Fr.  
 SO Macromol. Symp. (2000), 153(Recent Advances in Ring Opening (Metathesis)  
 Polymerization), 275-286  
 CODEN: MSYMEC; ISSN: 1022-1360  
 PB Wiley-VCH Verlag GmbH  
 DT Journal  
 LA English  
 CC 35-3 (Chemistry of Synthetic High Polymers)  
 AB The polymn. of epsilon-caprolactone and 2,2-dimethyltrimethylene  
 carbonate (DTC) initiated by various Lewis acid metal alkoxides (Zr and  
 rare earths) in the presence of alc. mols. has been investigated. Adding  
 alc. induces a fast transfer reaction which allows to synthesize  
 functionalized oligomers. The polymn. can be described according to a  
 living process with fast transfer reaction, so that the mol. wt. is easily

controlled. In the case of lactones, rare earths alkoxides allow to get higher activities so that functionalized oligomers can be obtained within less than 5 min. Some transesterification are noticed if the polymer chains are left in contact with the active centers after polymn. These active centers have been grafted onto porous supports. These solids act as actual chem. ligands able to modify drastically the kinetic behavior, particularly with regard to the controlled polymn. of ethylene and propylene oxides. Supported Y and Nd alkoxides are the best active centers for the polymn. of DTC. Finally, the heterogeneous character has been used to develop a new continuous polymn. process by using a plug flow reactor filled with grafted silica. The conversion as well as the d.p. depend either on the height of the bed or on the flow rate.

- ST anionic **ring opening** polymn oxygenated heterocycle;  
caprolactone anionic **ring opening** polymn;  
dimethyltrimethylene carbonate anionic **ring opening**  
polymn; **ethylene oxide** anionic **ring**  
**opening** polymn; kinetics anionic **ring opening**  
polymn; propylene oxide anionic **ring opening** polymn;  
catalyst **ring opening** polymn oxygenated heterocycle;  
zirconium alkoxide catalyst polymn oxygenated heterocycle; rare earth  
catalyst polymn oxygenated heterocycle
- IT Polymerization catalysts  
(anionic, **ring-opening**; anionic **ring**  
**opening** polymn. of oxygenated heterocycles with supported  
zirconium and rare earths alkoxide catalyst in presence of benzyl alc.)
- IT Polymerization kinetics  
(anionic, **ring-opening**; kinetics of anionic  
**ring opening** polymn. of oxygenated heterocycles with  
supported zirconium and rare earths alkoxide catalyst in presence of  
benzyl alc.)
- IT Chain transfer agents  
(benzyl alc.; anionic **ring opening** polymn. of  
oxygenated heterocycles with supported zirconium and rare earths  
alkoxide catalyst in presence of benzyl alc.)
- IT Y zeolites  
RL: CAT (Catalyst use); USES (Uses)  
(supports; anionic **ring opening** polymn. of  
oxygenated heterocycles with supported zirconium and rare earths  
alkoxide catalyst in presence of benzyl alc.)
- IT 2172-12-5, Yttrium triisopropoxide 3504-40-3, Samarium  
triisopropoxide 19236-15-8, Neodymium triisopropoxide  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts; anionic **ring opening** polymn. of  
oxygenated heterocycles with supported zirconium and rare earths  
alkoxide catalyst in presence of benzyl alc.)
- IT 100-51-6, Benzyl alcohol, uses  
RL: MOA (Modifier or additive use); USES (Uses)  
(chain-transfer agents; anionic **ring opening**  
polymn. of oxygenated heterocycles with supported zirconium and rare  
earths alkoxide catalyst in presence of benzyl alc.)
- IT 75-21-8, **Ethylene oxide**, reactions  
75-56-9, Propylene oxide, reactions 502-44-3,  
.epsilon.-Caprolactone 3592-12-9, 2,2-Dimethyltrimethylene carbonate  
RL: PRP (Properties); RCT (Reactant)  
(kinetics of anionic **ring opening** polymn. of  
oxygenated heterocycles with supported zirconium and rare earths  
alkoxide catalyst in presence of benzyl alc.)
- IT 1314-13-2, Zinc oxide, uses 1344-28-1, Alumina, uses 7631-86-9,  
Silica, uses  
RL: CAT (Catalyst use); USES (Uses)

(supports; anionic ring opening polymn. of  
oxygenated heterocycles with supported zirconium and rare earths  
alkoxide catalyst in presence of benzyl alc.)

RE.CNT 28

RE

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- (26) Vandenberg, E; J Polym Sci 1960, V47, P486 HCAPLUS
- (27) Yamashita, M; Macromolecules 1996, V29, P1798 HCAPLUS
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IT 2172-12-5, Yttrium triisopropoxide 3504-40-3, Samarium

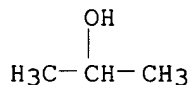
triisopropoxide 19236-15-8, Neodymium triisopropoxide

RL: CAT (Catalyst use); USES (Uses)

(catalysts; anionic ring opening polymn. of  
oxygenated heterocycles with supported zirconium and rare earths  
alkoxide catalyst in presence of benzyl alc.)

RN 2172-12-5 HCAPLUS

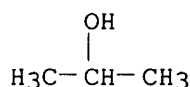
CN 2-Propanol, yttrium(3+) salt (9CI) (CA INDEX NAME)



1/3 Y(III)

RN 3504-40-3 HCAPLUS

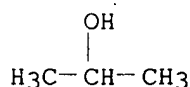
CN 2-Propanol, samarium(3+) salt (9CI) (CA INDEX NAME)



1/3 Sm(III)

RN 19236-15-8 HCAPLUS

CN 2-Propanol, neodymium(3+) salt (9CI) (CA INDEX NAME)



1/3 Nd(III)

IT 75-21-8, Ethylene oxide, reactions

75-56-9, Propylene oxide, reactions

RL: PRP (Properties); RCT (Reactant)

(kinetics of anionic **ring opening** polymn. of  
oxygenated heterocycles with supported zirconium and rare earths  
alkoxide catalyst in presence of benzyl alc.)

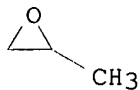
RN 75-21-8 HCAPLUS

CN Oxirane (9CI) (CA INDEX NAME)



RN 75-56-9 HCAPLUS

CN Oxirane, methyl- (9CI) (CA INDEX NAME)



L28 ANSWER 5 OF 38 HCAPLUS COPYRIGHT 2001 ACS

AN 2000:201700 HCAPLUS

DN 132:334842

TI Copolymerization of carbon dioxide, propylene oxide, and cyclohexene oxide  
by a yttrium-metal coordination catalyst system

AU Tan, Chung-Sung; Chang, Char-Fu; Hsu, Tsung-Ju

CS Department of Chemical Engineering, National Tsing Hua University,  
Hsinchu, 30043, Taiwan

SO Prepr. - Am. Chem. Soc., Div. Pet. Chem. (2000), 45(1), 100-103  
CODEN: ACPCAT; ISSN: 0569-3799

PB American Chemical Society, Division of Petroleum Chemistry

DT Journal

LA English

KATHLEEN FULLER EIC 1700/LAW LIBRARY 308-4290

CC 35-3 (Chemistry of Synthetic High **Polymers**)

AB Aliph.-cycloaliph. polycarbonates could be produced effectively by **ring-opening** copolymn. of cyclohexene oxide and propylene oxide with CO<sub>2</sub> using a cocatalyst system of Y(F<sub>3</sub>CCO<sub>2</sub>H)<sub>3</sub>, Et<sub>2</sub>Zn, and glycerol.

ST polycarbonate propylene oxide cyclohexene oxide based; cycloaliph aliph polycarbonate prepn yttrium catalyst; **ring opening** polymn catalyst polycarbonate prepn

IT Polycarbonates, preparation  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(aliph., cycloaliph.-; prepn. using yttrium-based polymn. catalysts)

IT Polymerization catalysts  
(**ring-opening**; for copolymn. of cyclohexene oxide and propylene oxide with carbon dioxide)

IT 56-81-5, Glycerol, uses 557-20-0, Diethylzinc 10361-93-0, Yttrium trinitrate **1554-47-9**, Yttrium tris(acetylacetonate) **23363-14-6**, Yttrium triacetate **37737-28-3**, Yttrium tris(trifluoroacetate) **114012-65-6**, Yttrium tris(2-ethylhexanoate)  
RL: **CAT (Catalyst use)**; USES (Uses)  
(in catalysts for copolymn. of cyclohexene oxide and propylene oxide with carbon dioxide)

IT **119727-39-8P**, Carbon dioxide-cyclohexene oxide-propylene oxide copolymer  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. using yttrium-based polymn. catalysts)

RE.CNT 8

RE

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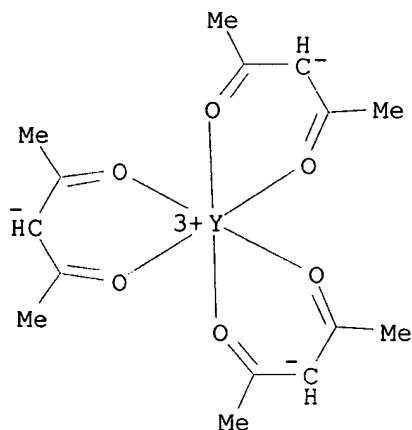
(7) Tan, C; Macromolecules 1997, V30, P3147 HCAPLUS

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IT **1554-47-9**, Yttrium tris(acetylacetonate) **23363-14-6**, Yttrium triacetate **37737-28-3**, Yttrium tris(trifluoroacetate) **114012-65-6**, Yttrium tris(2-ethylhexanoate)  
RL: **CAT (Catalyst use)**; USES (Uses)  
(in catalysts for copolymn. of cyclohexene oxide and propylene oxide with carbon dioxide)

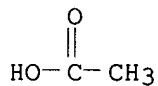
RN 1554-47-9 HCAPLUS

CN Yttrium, tris(2,4-pentanedionato-.kappa.O,.kappa.O')-, (OC-6-11)- (9CI)  
(CA INDEX NAME)



RN 23363-14-6 HCAPLUS

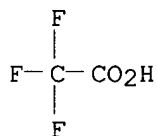
CN Acetic acid, yttrium(3+) salt (8CI, 9CI) (CA INDEX NAME)



1/3 Y(III)

RN 37737-28-3 HCAPLUS

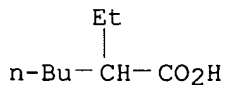
CN Acetic acid, trifluoro-, yttrium(3+) salt (9CI) (CA INDEX NAME)



1/3 Y(III)

RN 114012-65-6 HCAPLUS

CN Hexanoic acid, 2-ethyl-, yttrium(3+) salt (9CI) (CA INDEX NAME)



1/3 Y(III)

IT 119727-39-8P, Carbon dioxide-cyclohexene oxide-propylene oxide



copolymer

RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. using yttrium-based polymn. catalysts)

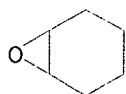
RN 119727-39-8 HCAPLUS

CN 7-Oxabicyclo[4.1.0]heptane, polymer with carbon dioxide and methyloxirane  
(9CI) (CA INDEX NAME)

CM 1

CRN 286-20-4

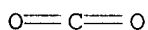
CMF C6 H10 O



CM 2

CRN 124-38-9

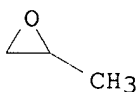
CMF C O2



CM 3

CRN 75-56-9

CMF C3 H6 O



L28 ANSWER 6 OF 38 HCAPLUS COPYRIGHT 2001 ACS

AN 2000:87354 HCAPLUS

DN 132:93838

TI **Ring-opening** polymerization of lactone under catalysis  
of rare-earth compound

IN Yuan, Minglong; Deng, Xianmo; Xiong, Chengdong

PA Chengdu Institute of Organic Chemistry, Chinese Academy of Sciences, Peop.  
Rep. China

SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 11 pp.

CODEN: CNXXEV

DT Patent

LA Chinese

IC ICM C08G065-10

CC 35-7 (Chemistry of Synthetic High **Polymers**)

Section cross-reference(s): 29, 37

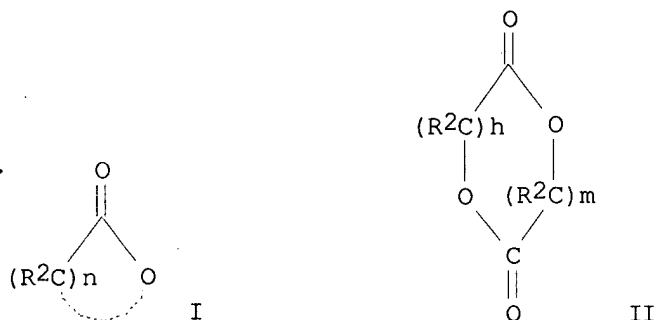
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI CN 1175601  
OS MARPAT 132:93838  
GI

A 19980311

CN 1996-117690 19960904

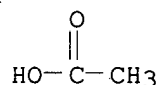


- AB The polymn. of lactone is carried out at 100-250.degree. for 10-3000 min in inert gas or vacuum in presence of catalysts of rare-earth org. carboxylate (LnZ3) or halogenated org. carboxylate, where Ln is Sc, or Y or one of lanthanide, Z is org. acid radical or halogenated org. acid radical (HCOO-, CH3COO-, CH3CH2COO-, CH3CH2CH2COO-, ClCH2COO-, CCl3COO-, CF3COO-, C6H5-COO-, -OOCCH2CH2COO-, BrCH2COO-). The molar ratio of monomer to catalyst is 200-20000. The lactone has structural formula I or II, where n = 3-5, R is H or alkyl group, h or m = 1 or 2; and may be DL-lactide, .epsilon.-caprolactone, glycolide, and 3-methyl-glycolide. The polymn. comprises homopolymn. and copolymn. between lactones or lactones and **polyether**, and the **polyether** is selected from polyethylene glycol, polypropylene glycol, and polybutylene glycol.
- ST lactone polymn rare earth carboxylate catalysis; **ring opening** polymn lactone lanthanum catalyst
- IT Rare earth compounds  
RL: CAT (Catalyst use); USES (Uses)  
(carboxylic acid salts, catalyst; **ring-opening** polymn. of lactone under catalysis of rare-earth compd.)
- IT **Polyethers**, preparation  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(polyester-; **ring-opening** polymn. of lactone and **polyether** under catalysis of rare-earth compd.)
- IT Polyesters, preparation  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(**polyether**-; **ring-opening** polymn. of lactone and **polyether** under catalysis of rare-earth compd.)
- IT Polyesters, preparation  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(**ring-opening** polymn. of lactone under catalysis of rare-earth compd.)
- IT Polymerization catalysts  
(**ring-opening**; **ring-opening** polymn. of lactone under catalysis of rare-earth compd.)
- IT 24980-41-4P, .epsilon.-Caprolactone homopolymer 26202-08-4P, Glycolide homopolymer 26680-10-4P 26780-50-7P, Glycolide-D,L-lactide copolymer 41706-81-4P, .epsilon.-Caprolactone-Glycolide copolymer 57321-94-5P 70524-20-8P, .epsilon.-Caprolactone-D,L-lactide copolymer 119388-27-1P  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(**ring-opening** polymn. of lactone under catalysis of rare-earth compd.)

IT 537-03-1, Lanthanum oxalate 917-70-4, Lanthanum acetate 2081-11-0, Lanthanum formate 14518-63-9, Lanthanum benzoate 16922-04-6, Samarium acetate 20101-71-7 20101-73-9 20325-14-8 20532-74-5 23363-14-6, Yttrium acetate 25681-97-4, Lanthanum propionate 25682-05-7 42138-71-6, Neodymium trichloroacetate 42181-51-1 70236-92-9, Lanthanum trifluoroacetate 70236-99-6 254989-96-3  
 RL: CAT (Catalyst use); USES (Uses)  
 (ring-opening polymn. of lactone under catalysis of rare-earth compd. contg.)

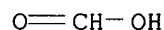
IT 917-70-4, Lanthanum acetate 2081-11-0, Lanthanum formate 14518-63-9, Lanthanum benzoate 16922-04-6, Samarium acetate 20101-71-7 20101-73-9 20325-14-8 20532-74-5 23363-14-6, Yttrium acetate 25681-97-4, Lanthanum propionate 25682-05-7 42138-71-6, Neodymium trichloroacetate 42181-51-1 70236-92-9, Lanthanum trifluoroacetate 70236-99-6 254989-96-3  
 RL: CAT (Catalyst use); USES (Uses)  
 (ring-opening polymn. of lactone under catalysis of rare-earth compd. contg.)

RN 917-70-4 HCAPLUS  
 CN Acetic acid, lanthanum(3+) salt (8CI, 9CI) (CA INDEX NAME)



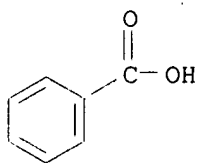
1/3 La(III)

RN 2081-11-0 HCAPLUS  
 CN Formic acid, lanthanum(3+) salt (8CI, 9CI) (CA INDEX NAME)



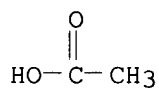
1/3 La(III)

RN 14518-63-9 HCAPLUS  
 CN Benzoic acid, lanthanum(3+) salt (8CI, 9CI) (CA INDEX NAME)



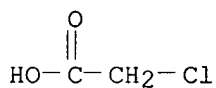
1/3 La(III)

RN 16922-04-6 HCAPLUS  
 CN Acetic acid, samarium salt (8CI, 9CI) (CA INDEX NAME)



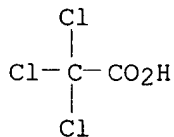
x Sm(x)

RN 20101-71-7 HCAPLUS  
 CN Acetic acid, chloro-, yttrium(3+) salt (8CI, 9CI) (CA INDEX NAME)



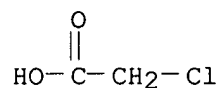
1/3 Y(III)

RN 20101-73-9 HCAPLUS  
 CN Acetic acid, trichloro-, yttrium(3+) salt (8CI, 9CI) (CA INDEX NAME)



1/3 Y(III)

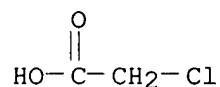
RN 20325-14-8 HCAPLUS  
 CN Acetic acid, chloro-, lanthanum(3+) salt (8CI, 9CI) (CA INDEX NAME)



1/3 La(III)

RN 20532-74-5 HCAPLUS

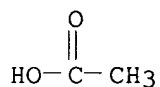
CN Acetic acid, chloro-, neodymium(3+) salt (8CI, 9CI) (CA INDEX NAME)



1/3 Nd(III)

RN 23363-14-6 HCAPLUS

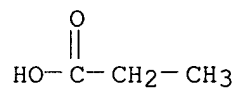
CN Acetic acid, yttrium(3+) salt (8CI, 9CI) (CA INDEX NAME)



1/3 Y(III)

RN 25681-97-4 HCAPLUS

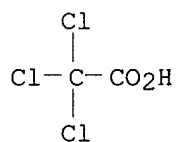
CN Propanoic acid, lanthanum(3+) salt (9CI) (CA INDEX NAME)



1/3 La(III)

RN 25682-05-7 HCAPLUS

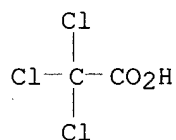
CN Acetic acid, trichloro-, lanthanum(3+) salt (8CI, 9CI) (CA INDEX NAME)



1/3 La(III)

RN 42138-71-6 HCAPLUS

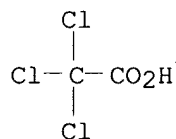
CN Acetic acid, trichloro-, neodymium(3+) salt (9CI) (CA INDEX NAME)



1/3 Nd(III)

RN 42181-51-1 HCAPLUS

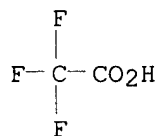
CN Acetic acid, trichloro-, samarium(3+) salt (9CI) (CA INDEX NAME)



1/3 Sm(III)

RN 70236-92-9 HCAPLUS

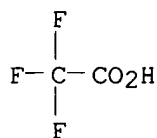
CN Acetic acid, trifluoro-, lanthanum(3+) salt (9CI) (CA INDEX NAME)



1/3 La(III)

RN 70236-99-6 HCAPLUS

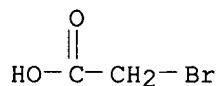
CN Acetic acid, trifluoro-, erbium(3+) salt (9CI) (CA INDEX NAME)



1/3 Er(III)

RN 254989-96-3 HCAPLUS

CN Acetic acid, bromo-, lanthanum(3+) salt (9CI) (CA INDEX NAME)



1/3 La(III)

L28 ANSWER 7 OF 38 HCAPLUS COPYRIGHT 2001 ACS

AN 1999:748336 HCAPLUS

DN 132:3594

TI Copolymerization of tetrahydrofurans and cyclic anhydrides

IN Drysdale, Neville Everton

PA E. I. du Pont de Nemours and Company, USA

SO U.S., 7 pp., Cont.-in-part of U.S. Ser. No. 505,293, abandoned.

CODEN: USXXAM

DT Patent

LA English

IC C08G063-42; C07C067-24

NCL 528271000

CC 35-3 (Chemistry of Synthetic High Polymers)

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5990264	A	19991123	US 1996-690119	19960731
	WO 9419392	A1	19940901	WO 1993-US10140	19931029
	W: JP, KR, US				
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
PRAI	US 1993-21369		19930223		
	WO 1993-US10140		19931029		
	US 1995-505293		19950822		
OS	MARPAT 132:3594				
AB	Poly(ester-ethers) are produced by the copolymn. of tetrahydrofurans and anhydrides using metal perfluoroalkylsulfonates and related compds. as catalysts. The resulting copolymers are useful as intermediates for monomers for use in other polymns. Thus, maleic anhydride-tetrahydrofuran copolymer was prepd. using Y triflate as a catalyst.				
ST	perfluoroalkylsulfonate catalyst polyester ether manuf; <b>polyether</b> ester manuf perfluoroalkylsulfonate catalyst; maleic anhydride THF polymn catalyst yttrium triflate				
IT	Perfluoro compounds				
	RL: CAT (Catalyst use); USES (Uses)				

- (alkane sulfonates; copolymn. of tetrahydrofurans and cyclic anhydrides and catalysts for)
- IT Sulfonates  
RL: CAT (Catalyst use); USES (Uses)  
(alkanesulfonates, perfluoro; copolymn. of tetrahydrofurans and cyclic anhydrides and catalysts for)
- IT Cyclic compounds  
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)  
(anhydrides, polymers with THF; copolymn. of tetrahydrofurans and cyclic anhydrides and catalysts for)
- IT Coordination compounds  
Rare earth compounds  
Transition metal compounds  
RL: CAT (Catalyst use); USES (Uses)  
(copolymn. of tetrahydrofurans and cyclic anhydrides and catalysts for)
- IT Monomers  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(copolymn. of tetrahydrofurans and cyclic anhydrides and catalysts for)
- IT Anhydrides  
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)  
(cyclic, polymers with THF; copolymn. of tetrahydrofurans and cyclic anhydrides and catalysts for)
- IT Metals, uses  
RL: CAT (Catalyst use); USES (Uses)  
(perfluoroalkylsulfonates; copolymn. of tetrahydrofurans and cyclic anhydrides and catalysts for)
- IT **Polyethers**, preparation  
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)  
(polyester-; copolymn. of tetrahydrofurans and cyclic anhydrides and catalysts for)
- IT Polyesters, preparation  
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)  
(**polyether**-; copolymn. of tetrahydrofurans and cyclic anhydrides and catalysts for)
- IT Polymerization catalysts  
(**ring-opening**; copolymn. of tetrahydrofurans and cyclic anhydrides and catalysts for)
- IT 27532-13-4 **34622-08-7**, Neodymium Triflate **52093-30-8**, Yttrium Triflate **54761-04-5**, Ytterbium Triflate 89672-77-5  
135179-20-3 **139177-62-1**, Dysprosium Triflate **139177-64-3**, Erbium Triflate **144026-79-9**, Scandium Triflate  
RL: **CAT (Catalyst use)**; USES (Uses)  
(copolymn. of tetrahydrofurans and cyclic anhydrides and catalysts for)
- IT 111287-32-2P 164385-22-2P 164385-23-3P  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(copolymn. of tetrahydrofurans and cyclic anhydrides and catalysts for)
- IT 25657-73-2P, Maleic anhydride-tetrahydrofuran copolymer 29564-74-7P, Succinic anhydride-tetrahydrofuran copolymer 29564-75-8P, Phthalic anhydride-tetrahydrofuran copolymer 165890-28-8P, cis-1,2-Cyclohexanedicarboxylic anhydride-tetrahydrofuran copolymer 165890-30-2P, Succinic anhydride-3-methyltetrahydrofuran-tetrahydrofuran copolymer 165890-31-3P, Pyromellitic dianhydride-tetrahydrofuran copolymer 250678-34-3P, Norbornene-2,3-dicarboxylic anhydride-tetrahydrofuran copolymer  
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)



(copolymn. of tetrahydrofurans and cyclic anhydrides and catalysts for)  
 IT 2923-28-6, Silver triflate 12083-48-6, Vanadocene dichloride  
 12116-66-4, Hafnocene dichloride 54039-38-2,  
 Bis(pentamethylcyclopentadienyl)zirconium dichloride  
 RL: RCT (Reactant)

(copolymn. of tetrahydrofurans and cyclic anhydrides and catalysts for)  
 RE.CNT 16  
 RE

- (1) Anon; WO 88/02661 1988 HCAPLUS
- (2) Borowsky, S; Organometallics 1991, V10, P1268
- (3) Dorai; US 5130470 1992 HCAPLUS
- (4) Dreyfuss, P; Polymer Letters Ed 1976, V14(3), P139 HCAPLUS
- (5) Drysdale; US 5430122 1995 HCAPLUS
- (6) Drysdale; US 5475069 1995 HCAPLUS
- (7) Drysdale; US 5478920 1995 HCAPLUS
- (8) Drysdale; US 5541346 1996 HCAPLUS
- (9) Farooq; US 5084586 1992 HCAPLUS
- (10) Habermeier, J; J Poly Science: Part C 1967, V16, P2131
- (11) Hilt, V; Makromol Chem 1967, V101, P246
- (12) Kropp; US 3842019 1974
- (13) Matsuda; US 3864287 1975 HCAPLUS
- (14) Matsukura, K; 1973, V78(16), P32
- (15) Matsuura; US 3464958 1969
- (16) Oechsner, W; Makromol Chem 1971, V150, P1 HCAPLUS

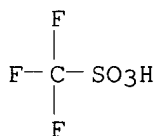
IT 34622-08-7, Neodymium Triflate 52093-30-8, Yttrium  
 Triflate 54761-04-5, Ytterbium Triflate 139177-62-1,  
 Dysprosium Triflate 139177-64-3, Erbium Triflate  
 144026-79-9, Scandium Triflate

RL: CAT (Catalyst use); USES (Uses)

(copolymn. of tetrahydrofurans and cyclic anhydrides and catalysts for)

RN 34622-08-7 HCAPLUS

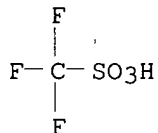
CN Methanesulfonic acid, trifluoro-, neodymium(3+) salt (9CI) (CA INDEX  
 NAME)



1/3 Nd(III)

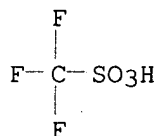
RN 52093-30-8 HCAPLUS

CN Methanesulfonic acid, trifluoro-, yttrium(3+) salt (9CI) (CA INDEX NAME)



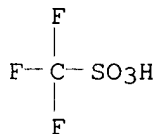
1/3 Y(III)

RN 54761-04-5 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, ytterbium(3+) salt (9CI) (CA INDEX NAME)



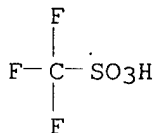
1/3 Yb(III)

RN 139177-62-1 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, dysprosium(3+) salt (9CI) (CA INDEX NAME)



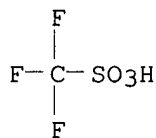
1/3 Dy(III)

RN 139177-64-3 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, erbium(3+) salt (9CI) (CA INDEX NAME)



1/3 Er(III)

RN 144026-79-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, scandium(3+) salt (9CI) (CA INDEX NAME)



1/3 Sc(III)

L28 ANSWER 8 OF 38 HCAPLUS COPYRIGHT 2001 ACS

AN 1999:687015 HCAPLUS

DN 131:351773

TI **Ring-opening** alternating copolymerization of phthalic anhydride and epichlorohydrin by Nd(acac)<sub>3</sub>-Al(i-Bu)<sub>3</sub>

AU Fang, Jianghua; Shen, Zhiquan

CS Department of Chemistry, Ningbo Normal College, Ningbo, Peop. Rep. China

SO Gaofenzi Cailiao Kexue Yu Gongcheng (1999), 15(5), 56-58

CODEN: GCKGEI; ISSN: 1000-7555

PB "Gaofenzi Cailiao Kexue Yu Gongcheng" Bianjibù

DT Journal

LA Chinese

CC 35-7 (Chemistry of Synthetic High **Polymers**)

AB The Nd(acac)<sub>3</sub>-Al(i-Bu)<sub>3</sub> was found to be a good catalyst for the alternating copolymn. of phthalic anhydride with epichlorohydrin. The structure of the copolymer was studied with IR and <sup>1</sup>H-NMR. The copolymer is a product of high alternation. There is more than 42% phthalic anhydride in the copolymer by calcg. the ratio of peak area of <sup>1</sup>H-NMR from the copolymer obtained from different monomer ratio. The copolymn. can be realized in the solvent's such as arom. hydrocarbon and alkane. The yield and [.eta.] are higher in arom. hydrocarbon than in other solvents. In toluene, the yield is 89.8% [.eta.] = 0.083 dL/g. The way of adding the raw materials to the reaction system influences the yield. The better order is PA.fwdarw.sol.fwdarw.ECH.fwdarw.cat. The more suitable concn. of catalysts is [Nd] = 1.0 .times. 10<sup>-2</sup> mol/L, [Al]/[Nd] = 6 .apprx. 8. The higher is the temp. of copolymn., the higher, are the yield and [.eta.]. The more suitable temp. is 80.degree.C. The kinetic studies indicate that the copolymn. reaction is first order with respect to both monomer concn. and catalyst concn. .DELTA.E = 112.0 kJ/mol.

ST phthalic anhydride epichlorohydrin alternating copolymn

IT Polymerization catalysts

(ring-opening; ring-opening

alternating copolymn. of phthalic anhydride and epichlorohydrin by Nd(acac)<sub>3</sub>-Al(i-Bu)<sub>3</sub>)

IT 100-99-2, Triisobutylaluminum, uses 16743-67-2,

Tris(acetylacetonato)neodymium trihydrate

RL: CAT (Catalyst use); USES (Uses)

(ring-opening alternating copolymn. of phthalic anhydride and epichlorohydrin by Nd(acac)<sub>3</sub>-Al(i-Bu)<sub>3</sub>)

IT 25684-71-3P, Phthalic anhydride-epichlorohydrin copolymer

151125-41-6P, Epichlorohydrin-phthalic anhydride copolymer, sru

RL: SPN (Synthetic preparation); PREP (Preparation)

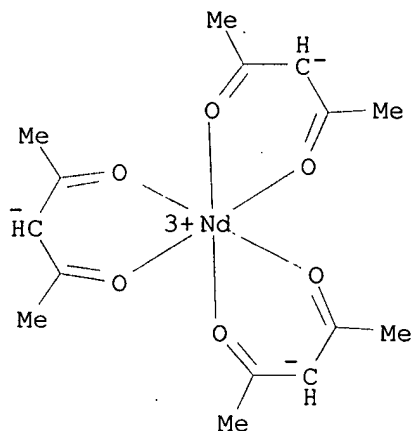
(ring-opening alternating copolymn. of phthalic anhydride and epichlorohydrin by Nd(acac)<sub>3</sub>-Al(i-Bu)<sub>3</sub>)

IT 16743-67-2, Tris(acetylacetonato)neodymium trihydrate

RL: CAT (Catalyst use); USES (Uses)

(ring-opening alternating copolymn. of phthalic

anhydride and epichlorohydrin by Nd(acac)3-Al(i-Bu)3  
 RN 16743-67-2 HCAPLUS  
 CN Neodymium, tris(2,4-pentanedionato-.kappa.O,.kappa.O')-, trihydrate,  
 (OC-6-11)- (9CI) (CA INDEX NAME)

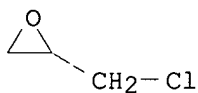


● 3 H<sub>2</sub>O

IT 25684-71-3P, Phthalic anhydride-epichlorohydrin copolymer  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (ring-opening alternating copolymn. of phthalic  
 anhydride and epichlorohydrin by Nd(acac)3-Al(i-Bu)3)  
 RN 25684-71-3 HCAPLUS  
 CN 1,3-Isobenzofurandione, polymer with (chloromethyl)oxirane (9CI) (CA  
 INDEX NAME)

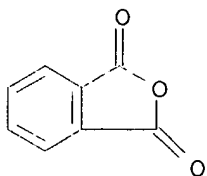
CM 1

CRN 106-89-8  
 CMF C3 H5 Cl O



CM 2

CRN 85-44-9  
 CMF C8 H4 O3



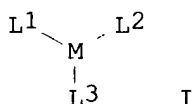
L28 ANSWER 9 OF 38 HCAPLUS COPYRIGHT 2001 ACS  
 AN 1999:549313 HCAPLUS  
 DN 131:170759  
 TI Process for producing **polyethers** by **ring-**  
**opening** polymerization of substituted **epoxides** using  
 rare earth metal compound catalysts  
 IN Miyanaga, Seiichi; Kawamukai, Hiroshi; Oda, Takashi  
 PA Kao Corporation, Japan  
 SO PCT Int. Appl., 51 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA Japanese  
 IC ICM C08G065-10  
 CC 35-3 (Chemistry of Synthetic High **Polymers**)  
 Section cross-reference(s): 67

*\* applicants*

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9942513	A1	19990826	WO 1999-JP687	19990217
	W: CN, JP, US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	EP 1057845	A1	20001206	EP 1999-905212	19990217
	R: DE, FR, GB				
PRAI	JP 1998-38343	A	19980220		
	WO 1999-JP687	W	19990217		

GI

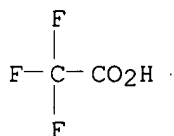


AB A process by which a substituted **epoxide** whose polymn. to a high degree has been extremely difficult or impossible is easily polymd. to efficiently prep. a **polyether** with high d.p. The process comprises polyng. a substituted **epoxide** (excluding propylene oxide and epihalohydrins) by **ring-opening** polymn. in the presence of compds. L1ML2L3 (M = rare earth element selected among Sc, Y, and lanthanide metal; L1-L3 = ligand combining with O) and a reducing compd. to obtain a **polyether**. Thus, heating stearyl glycidyl ether in the presence of samarium isopropoxide and methylaluminumoxane (Sm/Al mol ratio 1:6) in PhMe at 130.degree. for 10 h gave a polymer with Mw 1,610,000, and Mn 140,000.

ST rare earth metal compd polymn catalyst **epoxide**; substituted **epoxide** polymn catalyst; stearyl glycidyl ether polymn catalyst; samarium isopropoxide polymn catalyst **epoxide**

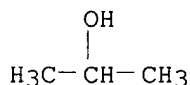
- IT Aluminoxanes  
RL: CAT (Catalyst use); USES (Uses)  
(Me; prepn. of **polyethers** by **ring-opening**  
polymn. of substituted **epoxides** using rare earth metal compd.  
catalysts)
- IT Polysiloxanes, preparation  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(polyoxyalkylene-; prepn. of **polyethers** by **ring-**  
**opening** polymn. of substituted **epoxides** using rare  
earth metal compd. catalysts)
- IT Polyoxyalkylenes, preparation  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(polysiloxane-; prepn. of **polyethers** by **ring-**  
**opening** polymn. of substituted **epoxides** using rare  
earth metal compd. catalysts)
- IT Rare earth compounds  
RL: CAT (Catalyst use); USES (Uses)  
(prepn. of **polyethers** by **ring-opening**  
polymn. of substituted **epoxides** using rare earth metal compd.  
catalysts)
- IT Polyoxyalkylenes, preparation  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(prepn. of **polyethers** by **ring-opening**  
polymn. of substituted **epoxides** using rare earth metal compd.  
catalysts)
- IT Polymerization catalysts  
(**ring-opening**, rare earth metal compds.; prepn. of  
**polyethers** by **ring-opening** polymn. of  
substituted **epoxides** using rare earth metal compd. catalysts)
- IT 557-20-0, Diethylzinc 2263-49-2, Samarium tris(trifluoroacetate)  
3504-40-3, Samarium isopropoxide 12581-48-5  
15492-50-9 15632-39-0  
RL: CAT (Catalyst use); USES (Uses)  
(prepn. of **polyethers** by **ring-opening**  
polymn. of substituted **epoxides** using rare earth metal compd.  
catalysts)
- IT 25722-70-7P, Polyglycidol 28325-89-5P, Methyl glycidyl  
ether homopolymer 31740-70-2P 88581-96-8P, Lauryl  
glycidyl ether homopolymer 151345-78-7P 195884-46-9P  
238422-58-7P 238422-59-8P 238422-60-1P  
238422-61-2P 238422-62-3P 238422-63-4P,  
Ethylene oxide-stearyl glycidyl ether copolymer  
238422-64-5P, Methyl methacrylate-stearyl glycidyl ether copolymer  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(prepn. of **polyethers** by **ring-opening**  
polymn. of substituted **epoxides** using rare earth metal compd.  
catalysts)
- IT 114482-33-6P 157723-26-7P  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation)  
(prepn. of **polyethers** by **ring-opening**  
polymn. of substituted **epoxides** using rare earth metal compd.  
catalysts)
- IT 106-92-3 541-05-9 678-39-7, 2-(Perfluorooctyl)ethanol  
1066-35-9, Chlorodimethylsilane  
RL: RCT (Reactant)  
(prepn. of **polyethers** by **ring-opening**  
polymn. of substituted **epoxides** using rare earth metal compd.  
catalysts)
- RE.CNT 7  
RE

- (1) Minnesota Mining And Manufacturing Co; US 4497861 A HCAPLUS  
 (2) Minnesota Mining And Manufacturing Co; JP 604568 A 1985  
 (3) Sagami Chemical Research Center; JP 07109351 A 1995 HCAPLUS  
 (4) The Bf Goodrich Co; US 4680358 A HCAPLUS  
 (5) The Bf Goodrich Co; JP 62174229 A 1993 HCAPLUS  
 (6) Yasuda, H; MACROMOL CHEM PHYS 1995, V196, P2417 HCAPLUS  
 (7) Zhang, Y; INORGANICA CHIMICA ACTA 1989, V155, P263 HCAPLUS  
 IT 2263-49-2, Samarium tris(trifluoroacetate) 3504-40-3,  
 Samarium isopropoxide 12581-48-5 15492-50-9 15632  
 -39-0  
 RL: CAT (Catalyst use); USES (Uses)  
 (prepn. of polyethers by ring-opening  
 polymn. of substituted epoxides using rare earth metal compd.  
 catalysts)  
 RN 2263-49-2 HCAPLUS  
 CN Acetic acid, trifluoro-, samarium(3+) salt (9CI) (CA INDEX NAME)



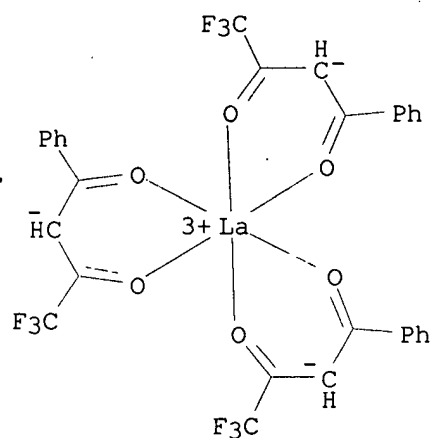
1/3 Sm(III)

- RN 3504-40-3 HCAPLUS  
 CN 2-Propanol, samarium(3+) salt (9CI) (CA INDEX NAME)



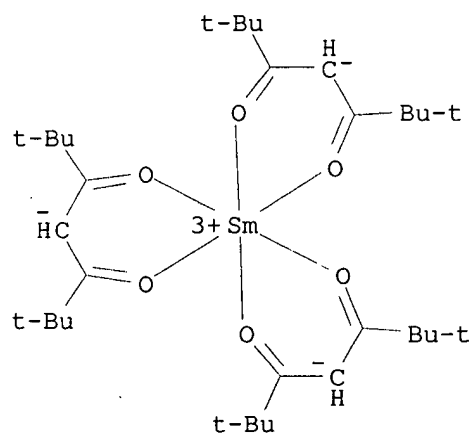
1/3 Sm(III)

- RN 12581-48-5 HCAPLUS  
 CN Lanthanum, tris(4,4,4-trifluoro-1-phenyl-1,3-butanedionato-  
 .kappa.O,.kappa.O')- (9CI) (CA INDEX NAME)



RN 15492-50-9 HCAPLUS

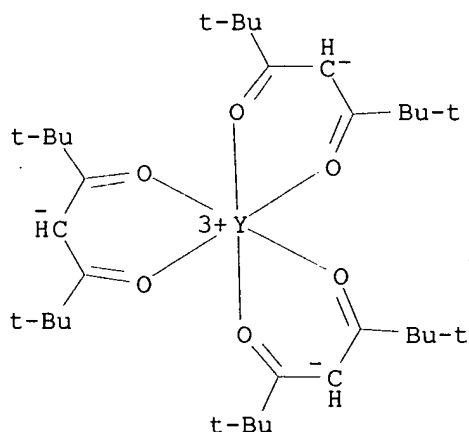
CN Samarium, tris(2,2,6,6-tetramethyl-3,5-heptanedionato-.kappa.O,.kappa.O')-,  
(OC-6-11)- (9CI) (CA INDEX NAME)



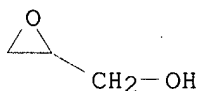
RN 15632-39-0 HCAPLUS

CN Yttrium, tris(2,2,6,6-tetramethyl-3,5-heptanedionato-.kappa.O,.kappa.O')-,  
(OC-6-11)- (9CI) (CA INDEX NAME)

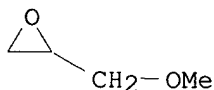




IT 25722-70-7P, Polyglycidol 28325-89-5P, Methyl glycidyl ether homopolymer 31740-70-2P 88581-96-8P, Lauryl glycidyl ether homopolymer 151345-78-7P 195884-46-9P 238422-58-7P 238422-59-8P 238422-60-1P 238422-61-2P 238422-62-3P 238422-63-4P, Ethylene oxide-stearyl glycidyl ether copolymer 238422-64-5P, Methyl methacrylate-stearyl glycidyl ether copolymer  
 RL: IMF (Industrial manufacture); PREP (Preparation) (prepn. of **polyethers** by **ring-opening** polymn. of substituted **epoxides** using rare earth metal compd. catalysts)  
 RN 25722-70-7 HCAPLUS  
 CN Oxiranemethanol, homopolymer (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 556-52-5  
 CMF C3 H6 O2



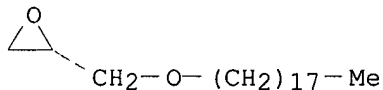
RN 28325-89-5 HCAPLUS  
 CN Oxirane, (methoxymethyl)-, homopolymer (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 930-37-0  
 CMF C4 H8 O2



RN 31740-70-2 HCAPLUS  
 CN Oxirane, [(octadecyloxy)methyl]-, homopolymer (9CI) (CA INDEX NAME)

CM 1

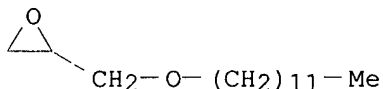
CRN 16245-97-9  
CMF C21 H42 O2



RN 88581-96-8 HCAPLUS  
CN Oxirane, [(dodecyloxy)methyl]-, homopolymer (9CI) (CA INDEX NAME)

CM 1

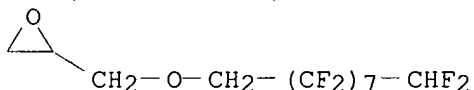
CRN 2461-18-9  
CMF C15 H30 O2



RN 151345-78-7 HCAPLUS  
CN Oxirane, [(2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9-hexadecafluorononyl)oxy]methyl]-, homopolymer (9CI) (CA INDEX NAME)

CM 1

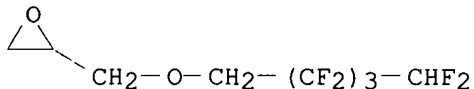
CRN 125370-60-7  
CMF C12 H8 F16 O2



RN 195884-46-9 HCAPLUS  
CN Oxirane, [(2,2,3,3,4,4,5,5-octafluoropentyl)oxy]methyl]-, homopolymer (9CI) (CA INDEX NAME)

CM 1

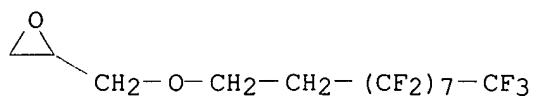
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CMF C8 H8 F8 O2



RN 238422-58-7 HCAPLUS  
CN Oxirane, [(3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptafluorodecyl)oxy]methyl]-, homopolymer (9CI) (CA INDEX NAME)

CM 1

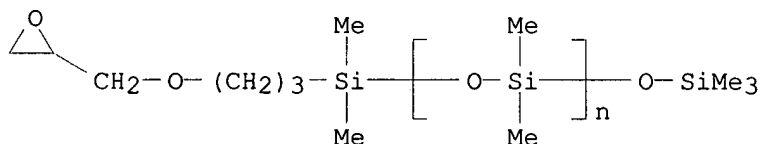
CRN 114482-33-6  
CMF C13 H9 F17 O2



RN	238422-59-8	HCAPLUS
CN	Poly[oxy(dimethylsilylene)], .alpha.-[dimethyl[3-(oxiranylmethoxy)propyl]silyl]-.omega.-[(trimethylsilyl)oxy]-, homopolymer (9CI) (CA INDEX NAME)	

CM 1

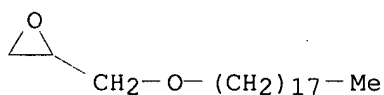
CRN 157723-26-7  
CMF (C2 H6 O Si)n C11 H26 O3 Si2  
CCI PMS



RN	238422-60-1	HCAPLUS
CN	Oxirane, [(octadecyloxy)methyl]-, polymer with [(octyloxy)methyl]oxirane (9CI) (CA INDEX NAME)	

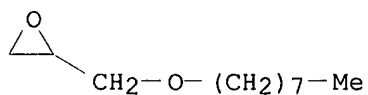
CM 1

CRN 16245-97-9  
CMF C21 H42 O2



CM 2

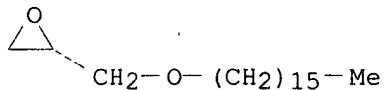
CRN 3385-66-8  
CMF C11 H22 O2



RN 238422-61-2 HCAPLUS  
CN Oxirane, [(hexadecyloxy)methyl]-, polymer with (phenoxyethyl)oxirane  
(9CI) (CA INDEX NAME)

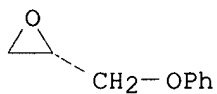
CM 1

CRN 15965-99-8  
CMF C19 H38 O2



CM 2

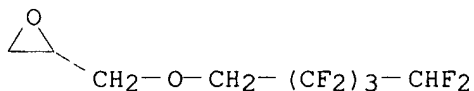
CRN 122-60-1  
CMF C9 H10 O2



RN 238422-62-3 HCAPLUS  
CN Oxirane, [(octadecyloxy)methyl]-, polymer with [[(2,2,3,3,4,4,5,5-octafluoropentyl)oxy]methyl]oxirane (9CI) (CA INDEX NAME)

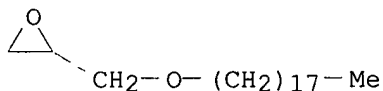
CM 1

CRN 19932-27-5  
CMF C8 H8 F8 O2



CM 2

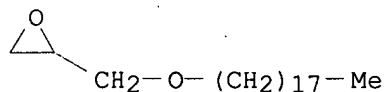
CRN 16245-97-9  
CMF C21 H42 O2



RN 238422-63-4 HCAPLUS  
CN Oxirane, [(octadecyloxy)methyl]-, polymer with oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 16245-97-9  
CMF C21 H42 O2



CM 2

CRN 75-21-8

CMF C2 H4 O



RN 238422-64-5 HCAPLUS

CN	2-Propenoic acid, 2-methyl-, methyl ester, polymer with [(octadecyloxy)methyl]oxirane (9CI)	(CA INDEX NAME)
----	---	-----------------

CM 1

CRN 16245-97-9

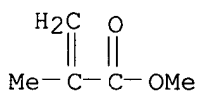
CMF C21 H42 O2


$$\text{CH}_2-\text{O}-(\text{CH}_2)_{17}-\text{Me}$$

CM 2

CRN 80-62-6

CMF C5 H8 O2



IT 114482-33-6P 157723-26-7P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation)  
(prepn. of **polyethers** by ring-opening  
polymn. of substituted **epoxides** using rare earth metal compd.  
catalysts)

RN 114482-33-6 HCAPLUS

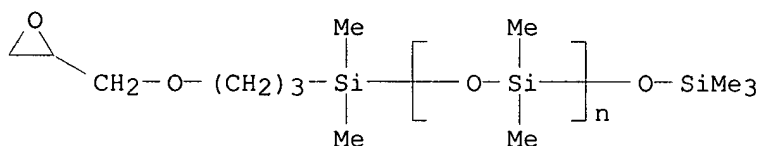
CN Oxirane, [[[(3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptafluorodecyl)oxy]methyl]- (9CI) (CA INDEX NAME)


$$\text{CH}_2-\text{O}-\text{CH}_2-\text{CH}_2-(\text{CF}_2)_7-\text{CF}_3$$

RN 157723-26-7 HCAPLUS

CN Poly[oxy(dimethylsilylene)], .alpha.-[dimethyl[3-

(oxiranylmethoxy)propyl)silyl]-.omega.-[(trimethylsilyl)oxy]- (9CI) (CA INDEX NAME)



IT 106-92-3

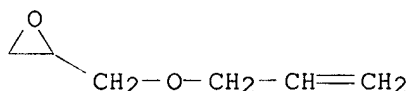
RL: RCT (Reactant)

(prepn. of **polyethers** by **ring-opening**

polymn. of substituted **epoxides** using rare earth metal compd. catalysts)

RN 106-92-3 HCAPLUS

CN Oxirane, [(2-propenyloxy)methyl]- (9CI) (CA INDEX NAME)



L28 ANSWER 10 OF 38 HCAPLUS COPYRIGHT 2001 ACS

AN 1999:262195 HCAPLUS

DN 130:312236

TI Catalyst composition based on a grafted metal oxide, its preparation and use in **ring-opening** polymerization involving O-containing rings

IN Delaite, Christelle; Hamaide, Thierry; Spitz, Roger; Tortosa, Karine

PA Rhodia Chimie, Fr.

SO PCT Int. Appl., 19 pp.

CODEN: PIXXD2

DT Patent

LA French

IC ICM B01J031-12

CC 35-3 (Chemistry of Synthetic High **Polymers**)

Section cross-reference(s): 67

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9919064	A1	19990422	WO 1998-FR2181	19981012
	W: BR, CA, CN, JP, KR, MX, US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	FR 2769521	A1	19990416	FR 1997-12827	19971014
	FR 2769521	B1	19991210		
	EP 1024898	A1	20000809	EP 1998-949040	19981012
	R: BE, DE, DK, ES, FR, GB, IT, NL, PT, FI				
	BR 9814609	A	20001003	BR 1998-14609	19981012
	JP 2001519233	T2	20011023	JP 2000-515687	19981012
PRAI	FR 1997-12827	A	19971014		
	WO 1998-FR2181	W	19981012		

OS MARPAT 130:312236

AB The compn. comprises a support consisting of a metal oxide capable of having OH functions, whereon are grafted M(OR)<sub>n</sub> groups, in which M is Sc, Zr, Hf, Nb, Ta, a rare earth, or an actinide; R is an org. group; and n is

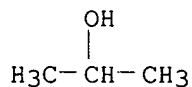
a pos. integer. The compn. is prepd. by forming a suspension of the support, then contacting and reacting the suspension with  $M(OR)_{n+1}$ . Thus, silica was heated to 100.degree. in 30 min, from 130.degree. to 450.degree. in 1 h, and at 450.degree. for 2 h, then cooled under vacuum, suspended in toluene under Ar, and treated with an  $Y(OPr-iso)_3$  soln. to give a catalyst contg. 11.4 wt.% Y and 2.14 wt.% C. Caprolactone was polymd. with this catalyst in toluene contg. anhyd. iso-PrOH for 10 min to reach av. d.p. 10.

- ST **ring opening** polymn catalyst; yttrium isopropoxide  
grafted silica catalyst; caprolactone polymn catalyst
- IT Polycarbonates, preparation  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(aliph.; catalyst compn. based on a grafted metal oxide for **ring-opening** polymn. of oxygen heterocycles)
- IT Polyoxyalkylenes, preparation  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(block; catalyst compn. based on a grafted metal oxide for **ring-opening** polymn. of oxygen heterocycles)
- IT **Ring opening** polymerization catalysts  
(catalyst compn. based on a grafted metal oxide for **ring-opening** polymn. of oxygen heterocycles)
- IT Aliphatic polyesters  
Polyoxyalkylenes, preparation  
RL: IMF (Industrial manufacture); PREP (Preparation).  
(catalyst compn. based on a grafted metal oxide for **ring-opening** polymn. of oxygen heterocycles)
- IT 100-51-6D, Benzyl alcohol, reaction products with silica and yttrium isopropoxide 1314-20-1D, Thorium oxide, reaction products with metal alkoxides 1314-23-4D, Zirconium oxide, reaction products with metal alkoxides 1344-28-1D, Alumina, reaction products with neodymium isopropoxide **2172-12-5D**, Yttrium isopropoxide, reaction products with silica **3504-40-3D**, Samarium isopropoxide, reaction products with alumina 7631-86-9D, Silica, reaction products with yttrium isopropoxide 11129-18-3D, Cerium oxide, reaction products with metal alkoxides 13421-85-7D, Zirconium isobutoxide, reaction products with alumina 13463-67-7D, Titanium oxide, reaction products with metal alkoxides **19236-15-8D**, Neodymium isopropoxide, reaction products with alumina  
RL: **CAT (Catalyst use)**; **USES (Uses)**  
(catalyst compn. based on a grafted metal oxide for **ring-opening** polymn. of oxygen heterocycles)
- IT 24980-41-4P, Polycaprolactone 25248-42-4P, Polycaprolactone 25322-68-3P, Poly(**ethylene oxide**) **25322-69-4P**, Poly(propylene oxide) 29035-08-3P, Neopentyl glycol carbonate homopolymer 40872-19-3P, Neopentyl glycol carbonate homopolymer, SRU **106392-12-5P**, **Ethylene oxide**-propylene oxide block copolymer  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(catalyst compn. based on a grafted metal oxide for **ring-opening** polymn. of oxygen heterocycles)
- RE.CNT 3
- RE
- (1) BASF AG; EP 0776699 A 1997 HCAPLUS  
(2) Phillips Petroleum Co; EP 0230983 A 1987 HCAPLUS  
(3) Verpoort, F; WO 9529755 A 1995 HCAPLUS
- IT **2172-12-5D**, Yttrium isopropoxide, reaction products with silica **3504-40-3D**, Samarium isopropoxide, reaction products with alumina **19236-15-8D**, Neodymium isopropoxide, reaction products with alumina  
RL: **CAT (Catalyst use)**; **USES (Uses)**

(catalyst compn. based on a grafted metal oxide for **ring-opening** polymn. of oxygen heterocycles)

RN 2172-12-5 HCAPLUS

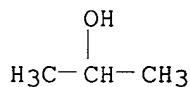
CN 2-Propanol, yttrium(3+) salt (9CI) (CA INDEX NAME)



1/3 Y(III)

RN 3504-40-3 HCAPLUS

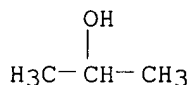
CN 2-Propanol, samarium(3+) salt (9CI) (CA INDEX NAME)



1/3 Sm(III)

RN 19236-15-8 HCAPLUS

CN 2-Propanol, neodymium(3+) salt (9CI) (CA INDEX NAME)



1/3 Nd(III)

IT 25322-69-4P, Poly(propylene oxide) 106392-12-5P,

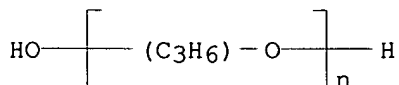
**Ethylene oxide**-propylene oxide block copolymer

RL: IMF (Industrial manufacture); PREP (Preparation)

(catalyst compn. based on a grafted metal oxide for **ring-opening** polymn. of oxygen heterocycles)

RN 25322-69-4 HCAPLUS

CN Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy- (9CI)  
(CA INDEX NAME)



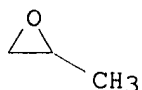
RN 106392-12-5 HCAPLUS

CN Oxirane, methyl-, polymer with oxirane, block (9CI) (CA INDEX NAME)

CM 1



CRN 75-56-9  
CMF C3 H6 O



CM 2

CRN 75-21-8  
CMF C2 H4 O



- L28 ANSWER 11 OF 38 HCAPLUS COPYRIGHT 2001 ACS  
AN 1999:183146 HCAPLUS  
DN 130:325419  
TI Discrete Yttrium(III) Complexes as Lactide Polymerization Catalysts  
AU Chamberlain, Bradley M.; Sun, Yongping; Hagadorn, John R.; Hemmesch, Eric W.; Young, Victor G., Jr.; Pink, Maren; Hillmyer, Marc A.; Tolman, William B.  
CS Department of Chemistry, University of Minnesota, Minneapolis, MN, 55455, USA  
SO Macromolecules (1999), 32(7), 2400-2402  
CODEN: MAMOBX; ISSN: 0024-9297  
PB American Chemical Society  
DT Journal  
LA English  
CC 35-3 (Chemistry of Synthetic High Polymers)  
Section cross-reference(s): 67, 75, 78  
AB Yttrium complexes ligated to various multidentate ligands were prepd. and characterized. These complexes catalyzed the polymn. of DL-lactide and their structural differences affected the polymn. rate and the polymer mol. wts.  
ST yttrium complex lactide polymn catalyst; polyester prepn catalyst yttrium complex; **ring opening** polymn catalyst yttrium; crystal structure yttrium triazacyclononane dinuclear complex catalyst  
IT **Ring opening** polymerization catalysts  
(discrete yttrium complexes as catalysts for polymn. of lactide)  
IT Polyesters, preparation  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(discrete yttrium complexes as catalysts for polymn. of lactide)  
IT Crystal structure  
Molecular structure  
(of yttrium tris(hydroxyalkyl)triazacyclononane dinuclear complex polymn. catalyst)  
IT 223719-22-0P 223719-23-1P 223719-25-3P  
RL: **CAT (Catalyst use)**; PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(catalysts; prepn. and crystal and mol. structure as catalyst for polymn. of lactide)  
IT 223719-24-2P

RL: CAT (Catalyst use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(catalysts; prepn. and mol. structure as catalyst for polymn. of lactide)

IT 26023-30-3P, DL-Lactide homopolymer, sru 26680-10-4P, DL-Lactide homopolymer  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(discrete yttrium complexes as catalysts for polymn. of lactide)

IT 106610-88-2P 151750-90-2P 191788-23-5P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation)  
(prepn. and characterization and complexation with yttrium)

IT 223719-27-5P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. of)

IT 4730-54-5, 1,4,7-Triazacyclononane  
RL: RCT (Reactant)  
(reaction with alkylene oxide)

IT 558-30-5, Isobutylene oxide 16088-62-3, S-Propylene oxide, reactions 82378-47-0, 2R-2-Isopropylloxirane  
RL: RCT (Reactant)  
(reaction with triazacyclononane)

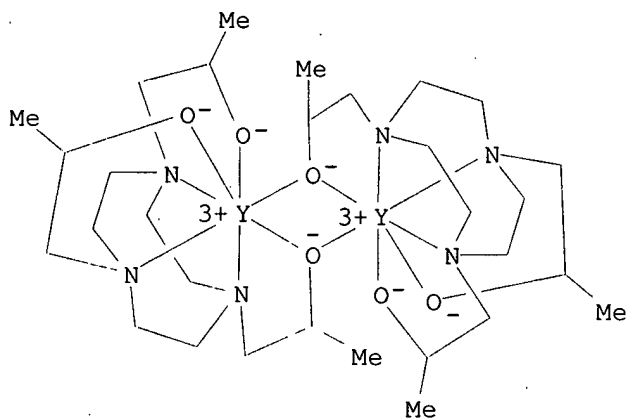
RE.CNT 26  
RE

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(2) Belal, A; Inorg Chem 1991, V30, P4397 HCAPLUS  
(3) Belal, A; J Chem Soc Chem Commun 1991, P402 HCAPLUS  
(4) Belal, A; J Chem Soc Dalton Trans 1989, P931 HCAPLUS  
(5) Fallis, I; J Chem Soc Dalton Trans 1993, P2759 HCAPLUS  
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(16) Simic, V; Macromolecules 1997, V30, P7338 HCAPLUS  
(17) Spassky, N; Macromol Chem Phys 1996, V197, P2627 HCAPLUS  
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(22) Trofimoff, L; Chem Lett Chem Soc Jpn 1987, P991 HCAPLUS  
(23) Vert, M; J Mater Sci Pure Appl Chem 1995, VA32, P787 HCAPLUS  
(24) Vert, M; Makromol Chem Symp 1986, V6, P109 HCAPLUS  
(25) Wainwright, K; Coord Chem Rev 1997, V166, P35 HCAPLUS  
(26) Yasuda, H; Macromolecules 1992, V25, P5115 HCAPLUS

IT 223719-22-0P 223719-23-1P 223719-25-3P  
RL: CAT (Catalyst use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(catalysts; prepn. and crystal and mol. structure as catalyst for polymn. of lactide)

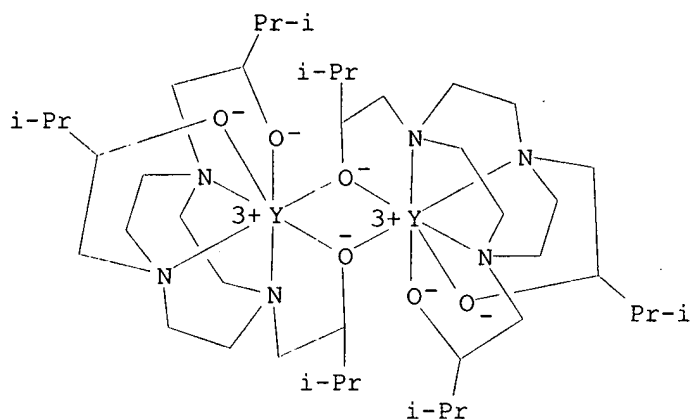
RN 223719-22-0 HCAPLUS

CN Yttrium, bis[.mu.-[hexahydro-.alpha.,.alpha.',.alpha.''-trimethyl-1H-1,4,7-triazonine-1,4,7-triethanolato(3-)-.kappa.N1,.kappa.N4,.kappa.N7,.kappa.O1,.kappa.O4,.kappa.O7:.kappa.O1]]di- (9CI) (CA INDEX NAME)



RN 223719-23-1 HCAPLUS

CN Yttrium, bis[.mu.-[hexahydro-.alpha.,.alpha.',.alpha.''-tris(1-methylethyl)-1H-1,4,7-triazonine-1,4,7-triethanolato(3-)-.kappa.N1,.kappa.N4,.kappa.N7,.kappa.O1,.kappa.O4,.kappa.O7:.kappa.O1]]di-(9CI) (CA INDEX NAME)



RN 223719-25-3 HCAPLUS

CN Yttrium, diaquabis[.mu.-[hexahydro-.alpha.,.alpha.,.alpha.',.alpha.',.alpha.''-hexamethyl-1H-1,4,7-triazonine-1,4,7-triethanolato(3-)-.kappa.N1,.kappa.N4,.kappa.N7,.kappa.O1,.kappa.O4,.kappa.O7:.kappa.O1]]di-, compd. with methylbenzene (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 223719-24-2

CMF C36 H76 N6 O8 Y2

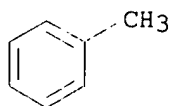
CCI CCS

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 108-88-3

CMF C7 H8



IT 223719-24-2P

RL: CAT (Catalyst use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(catalysts; prepn. and mol. structure as catalyst for polymn. of lactide)

RN 223719-24-2 HCAPLUS

CN Yttrium, diaquabis[.mu.-[hexahydro-.alpha.,.alpha.,.alpha.',.alpha.',.alpha.a.',.alpha.''-hexamethyl-1H-1,4,7-triazonine-1,4,7-triethanolato(3-)-.kappa.N1,.kappa.N4,.kappa.N7,.kappa.O1,.kappa.O4,.kappa.O7:.kappa.O1]]di-(9CI) (CA INDEX NAME)

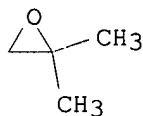
\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IT 558-30-5, Isobutylene oxide 16088-62-3, S-Propylene oxide, reactions 82378-47-0, 2R-2-Isopropylloxirane

RL: RCT (Reactant)  
(reaction with triazacyclononane)

RN 558-30-5 HCAPLUS

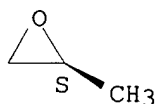
CN Oxirane, 2,2-dimethyl- (9CI) (CA INDEX NAME)



RN 16088-62-3 HCAPLUS

CN Oxirane, methyl-, (2S)- (9CI) (CA INDEX NAME)

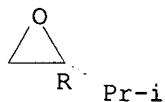
Absolute stereochemistry. Rotation (-).



RN 82378-47-0 HCAPLUS

CN Oxirane, (1-methylethyl)-, (2R)- (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (-).



L28 ANSWER 12 OF 38 HCAPLUS COPYRIGHT 2001 ACS

AN 1998:501195 HCAPLUS

DN 129:161991

TI Manufacture of polyether polyols

KATHLEEN FULLER EIC 1700/LAW LIBRARY 308-4290

IN Hofmann, Jorg; Gupta, Pramod; Pielartzik, Harald

PA Bayer A.-G., Germany

SO Eur. Pat. Appl., 11 pp.

CODEN: EPXXDW

DT Patent

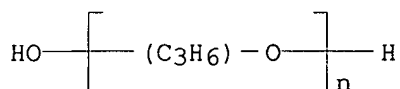
LA German

IC ICM C08G065-28

CC 35-7 (Chemistry of Synthetic High Polymers)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 855417	A1	19980729	EP 1998-100508	19980114
	EP 855417	B1	20000628		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	DE 19702787	A1	19980730	DE 1997-19702787	19970127
	ES 2149620	T3	20001101	ES 1998-100508	19980114
	US 6093793	A	20000725	US 1998-8986	19980120
	CA 2227834	AA	19980727	CA 1998-2227834	19980122
	JP 10212348	A2	19980811	JP 1998-26312	19980126
	BR 9800458	A	19990706	BR 1998-458	19980126
PRAI	DE 1997-19702787	A	19970127		
AB	The polyols are prepd. by acid-catalyzed polyaddn. of <b>alkylene oxides</b> to active-H compds. in the presence of a Group IIIB metal perfluoroalkylsulfonate at 40-200.degree., optionally in an inert org. solvent. The catalyst is easily sepd. from the reaction mixt. for recycle. Thus, 24.1 g propylene oxide was polymd. on 1.58 g propylene glycol in the presence of 37 mg Y(O3SCF3)3 at 90.degree. to give a polyol with no.-av. mol. wt. 1086. The catalyst pptd. upon addn. of 50 mL hexane at room temp., was filtered off, and the hexane was removed by distn.				
ST	yttrium triflate catalyst propylene oxide polymn; polyoxyalkylene polyol manuf; polypropylene glycol manuf acid catalyst				
IT	Polyoxyalkylenes, preparation				
	RL: IMF (Industrial manufacture); PREP (Preparation) (manuf. of <b>polyether</b> polyols)				
IT	<b>Ring opening</b> polymerization catalysts (rare earth metal triflates; manuf. of <b>polyether</b> polyols)				
IT	<b>25322-69-4P</b> , Polypropylene glycol				
	RL: IMF (Industrial manufacture); PREP (Preparation) (manuf. of <b>polyether</b> polyols)				
IT	<b>52093-26-2</b> , Lanthanum triflate <b>52093-29-5</b> , Gadolinium triflate <b>54761-04-5</b> , Ytterbium triflate <b>126857-69-0</b> , Lutetium triflate				
	RL: <b>CAT (Catalyst use)</b> ; USES (Uses) (polymn. catalyst; manuf. of <b>polyether</b> polyols)				
IT	<b>52093-30-8</b> , Yttrium triflate				
	RL: <b>CAT (Catalyst use)</b> ; REM (Removal or disposal); PROC (Process); USES (Uses) (polymn. catalyst; manuf. of <b>polyether</b> polyols)				
IT	<b>25322-69-4P</b> , Polypropylene glycol				
	RL: IMF (Industrial manufacture); PREP (Preparation) (manuf. of <b>polyether</b> polyols)				
RN	<b>25322-69-4</b> HCAPLUS				
CN	Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy- (9CI) (CA INDEX NAME)				

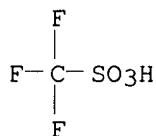


IT 52093-26-2, Lanthanum triflate 52093-29-5, Gadolinium triflate 54761-04-5, Ytterbium triflate 126857-69-0, Lutetium triflate

RL: **CAT (Catalyst use)**; USES (Uses)  
(polymn. catalyst; manuf. of **polyether** polyols)

RN 52093-26-2 HCAPLUS

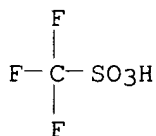
CN Methanesulfonic acid, trifluoro-, lanthanum(3+) salt (9CI) (CA INDEX NAME)



● 1/3 La(III)

RN 52093-29-5 HCAPLUS

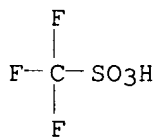
CN Methanesulfonic acid, trifluoro-, gadolinium(3+) salt (9CI) (CA INDEX NAME)



1/3 Gd(III)

RN 54761-04-5 HCAPLUS

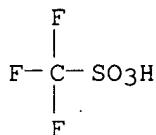
CN Methanesulfonic acid, trifluoro-, ytterbium(3+) salt (9CI) (CA INDEX NAME)



1/3 Yb(III)

RN 126857-69-0 HCAPLUS

CN Methanesulfonic acid, trifluoro-, lutetium(3+) salt (9CI) (CA INDEX NAME)



1/3 Lu(III)

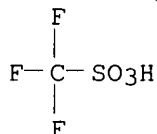
IT 52093-30-8, Yttrium triflate

RL: **CAT (Catalyst use)**; REM (Removal or disposal); PROC  
(Process); USES (Uses)

(polymn. catalyst; manuf. of **polyether** polyols)

RN 52093-30-8 HCAPLUS

CN Methanesulfonic acid, trifluoro-, yttrium(3+) salt (9CI) (CA INDEX NAME)



1/3 Y(III)

L28 ANSWER 13 OF 38 HCAPLUS COPYRIGHT 2001 ACS

AN 1997:351716 HCAPLUS

DN 127:34551

TI Random copolymerization of .epsilon.-caprolactone and trimethylene carbonate with rare earth catalysts

AU Shen, Youqing; Shen, Zhiquan; Zhang, Yifeng; Huang, Qiaohong; Shen, Lianfang; Yuan, Hanzhen

CS Dep. Polymer Sci. and Eng., Zhejiang Univ., Hangzhou, 310027, Peop. Rep. China

SO J. Appl. Polym. Sci. (1997), 64(11), 2131-2139

CODEN: JAPNAB; ISSN: 0021-8995

PB Wiley

DT Journal

LA English

CC 35-3 (Chemistry of Synthetic High **Polymers**)

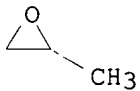
AB Random copolymn. of trimethylene carbonate (TMC) with .epsilon.-caprolactone (CL) catalyzed by rare earth chloride-**epoxide** or rare earth isopropoxide was investigated. In the presence of **epoxide**, rare earth chlorides have high activities for the copolymn., giving high-mol.-wt. random copolymer with a narrow mol. wt. distribution. Light rare earth chlorides are more effective than heavy rare earth chlorides. For the rare earth chloride-**epoxide** catalyst system, **epoxide** is the requisite component, and its amt. affects the catalytic activity; while rare earth isopropoxide can catalyze the copolymn. alone. The reactivity ratios of CL and TMC were detd. by the Fineman-Ross method. The copolymers were characterized by

- 1H- and 13C-NMR, GPC, and DSC. The mechanism is discussed.
- ST trimethylene carbonate caprolactone copolymn; rare earth catalyst caprolactone copolymn; kinetics trimethylene carbonate caprolactone copolymn; mechanism trimethylene carbonate caprolactone copolymn
- IT **Ring opening polymerization**  
Ring opening polymerization catalysts  
(mechanism of caprolactone-trimethylene carbonate random copolymn. using rare earth metal catalysts)
- IT Reactivity ratio in polymerization  
(of caprolactone with trimethylene carbonate using rare earth metal catalysts)
- IT Polyesters, preparation  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(polycarbonate-; prepn. of caprolactone-trimethylene carbonate copolymer using rare earth metal chloride/**epoxide** or rare earth metal isopropoxide catalysts)
- IT Polycarbonates, preparation  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(polyester-; prepn. of caprolactone-trimethylene carbonate copolymer using rare earth metal chloride/**epoxide** or rare earth metal isopropoxide catalysts)
- IT 75-21-8, Oxirane, uses 75-56-9, uses  
106-89-8, uses 6742-68-3, Dysprosium isopropoxide  
10024-93-8, Neodymium chloride 10025-74-8, Dysprosium chloride  
10025-76-0, Europium chloride 10099-58-8, Lanthanum chloride  
10138-41-7, Erbium chloride 10138-52-0, Gadolinium chloride  
10361-91-8, Ytterbium chloride 14532-05-9, Gadolinium isopropoxide 19236-15-8, Neodymium isopropoxide  
19446-52-7, Lanthanum isopropoxide  
RL: **CAT (Catalyst use)**; USES (Uses)  
(caprolactone-trimethylene carbonate random copolymn. using rare earth metal chloride/**epoxide** or rare earth metal isopropoxide catalysts)
- IT 96-48-0, .gamma.-Butyrolactone  
RL: **CAT (Catalyst use)**; USES (Uses)  
(in caprolactone-trimethylene carbonate random copolymn. using rare earth metal chloride/**epoxide** or rare earth metal isopropoxide catalysts)
- IT 502-44-3, 2-Oxepanone 2453-03-4, Trimethylene carbonate  
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process)  
(mechanism and reactivity ratios in caprolactone-trimethylene carbonate random copolymn. using rare earth metal catalysts)
- IT 116828-94-5P, .epsilon.-Caprolactone-trimethylene carbonate copolymer  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. using rare earth metal chloride/**epoxide** or rare earth metal isopropoxide catalysts)
- IT 75-21-8, Oxirane, uses 75-56-9, uses  
106-89-8, uses 6742-68-3, Dysprosium isopropoxide  
14532-05-9, Gadolinium isopropoxide 19236-15-8, Neodymium isopropoxide 19446-52-7, Lanthanum isopropoxide  
RL: **CAT (Catalyst use)**; USES (Uses)  
(caprolactone-trimethylene carbonate random copolymn. using rare earth metal chloride/**epoxide** or rare earth metal isopropoxide catalysts)
- RN 75-21-8 HCAPLUS
- CN Oxirane (9CI) (CA INDEX NAME)

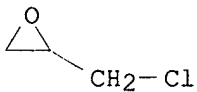




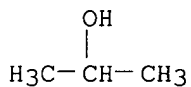
RN 75-56-9 HCAPLUS  
CN Oxirane, methyl- (9CI) (CA INDEX NAME)



RN 106-89-8 HCAPLUS  
CN Oxirane, (chloromethyl)- (9CI) (CA INDEX NAME)

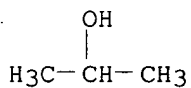


RN 6742-68-3 HCAPLUS  
CN 2-Propanol, dysprosium(3+) salt (9CI) (CA INDEX NAME)



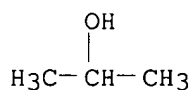
1/3 Dy(III)

RN 14532-05-9 HCAPLUS  
CN 2-Propanol, gadolinium(3+) salt (9CI) (CA INDEX NAME)



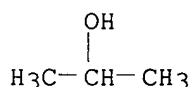
1/3 Gd(III)

RN 19236-15-8 HCAPLUS  
CN 2-Propanol, neodymium(3+) salt (9CI) (CA INDEX NAME)



1/3 Nd(III)

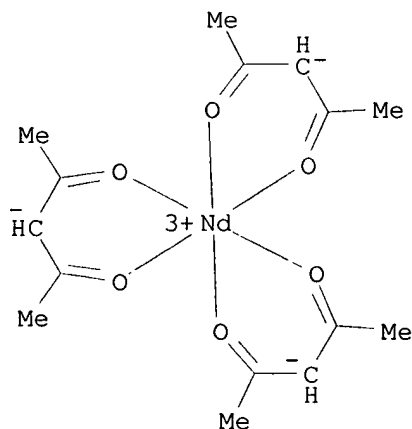
RN 19446-52-7 HCAPLUS  
CN 2-Propanol, lanthanum(3+) salt (9CI) (CA INDEX NAME)



1/3 La(III)

L28 ANSWER 14 OF 38 HCAPLUS COPYRIGHT 2001 ACS  
AN 1997:55549 HCAPLUS  
DN 126:90073  
TI Copolymerization of chloromethylthiirane with epichlorohydrin by rare earth coordination catalysts  
AU Sun, Wei-Lin; Shen, Zhi-Quan; Li, Wei-Shi; Zhang, Yi-Feng  
CS Dep. Polymer Sci. Eng., Zhejiang Univ., Hangzhou, 310027, Peop. Rep. China  
SO Gaodeng Xuexiao Huaxue Xuebao (1996), 17(10), 1638-1643  
CODEN: KTHPDM; ISSN: 0251-0790  
PB Gaodeng Jiaoyu Chubanshe  
DT Journal  
LA Chinese  
CC 37-3 (Plastics Manufacture and Processing)  
Section cross-reference(s): 35  
AB Chloromethylthiirane (CMT) with epichlorohydrin (ECH) was copolymd. using rare earth coordination catalysts for the first time. The rare earth coordination catalysts, esp. Nd(acac)3-Al(i-Bu)3 and Nd(naph)3-Al(i-Bu)3 are highly active, giving rather high-mol.-wt. ([.eta.] = 0.16 dL/g) alternate-rich copolymer in fairly high yield (60%), and the catalytic efficiency of Nd(acac)3-Al(i-Bu)3 reached 10,000 g copolymer/mol Nd. Characteristics of the copolymn. with Na(acac)3-Al(i-Bu)3 had been studied in detail. The reactivity ratio of CMT (1) and ECH (2) was obtained to be 0.22 (r1) and 0.097(r2) from the sulfur contents of the copolymers detd. by oxygen combustion method. The structure and the mol. wt. of copolymer were characterized by IR, 13C-NMR, GPC and VPO.  
ST chloromethylthiirane epichlorohydrin polymn rare earth catalyst; tributylaluminum neodymium acetylacetonate catalyst **ring opening**; naphthalenate neodymium catalyst **ring opening**; reactivity ratio polymn chloromethylthiirane epichlorohydrin  
IT Naphthenic acids, uses  
RL: CAT (Catalyst use); USES (Uses)  
(neodymium salts; prepn. and characterization of chloromethylthiirane-epichlorohydrin copolymer by rare earth coordination catalysts)  
IT **Ring opening** polymerization  
(prepn. and characterization of chloromethylthiirane-epichlorohydrin

- copolymer by rare earth coordination catalysts)
- IT **Ring opening** polymerization catalysts  
(reactivity ratio in copolymn. of chloromethylthiirane with epichlorohydrin by rare earth coordination catalysts)
- IT Reactivity ratio in polymerization  
(**ring-opening**; reactivity ratio in copolymn. of chloromethylthiirane with epichlorohydrin by rare earth coordination catalysts)
- IT Polymer chains  
(structure; reactivity ratio in copolymn. of chloromethylthiirane with epichlorohydrin by rare earth coordination catalysts)
- IT 7732-18-5, Water, uses 15554-47-9  
RL: NUU (Nonbiological use, unclassified); USES (Uses)  
(effects on copolymn. of chloromethylthiirane with epichlorohydrin by rare earth coordination catalysts)
- IT 1116-70-7, Tributylaluminum 14589-38-9 35656-11-2 38326-06-6 79321-05-4 101135-91-5  
RL: CAT (Catalyst use); USES (Uses)  
(prepn. and characterization of chloromethylthiirane-epichlorohydrin copolymer by rare earth coordination catalysts)
- IT 54335-37-4P  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(prepn. and characterization of chloromethylthiirane-epichlorohydrin copolymer by rare earth coordination catalysts)
- IT 106-89-8, reactions 3221-15-6, Chloromethylthiirane  
RL: RCT (Reactant)  
(reactivity ratio in copolymn. of chloromethylthiirane with epichlorohydrin by rare earth coordination catalysts)
- IT 14589-38-9 35656-11-2 38326-06-6 79321-05-4 101135-91-5  
RL: CAT (Catalyst use); USES (Uses)  
(prepn. and characterization of chloromethylthiirane-epichlorohydrin copolymer by rare earth coordination catalysts)
- RN 14589-38-9 HCAPLUS
- CN Neodymium, tris(2,4-pentanedionato-.kappa.O,.kappa.O')-, (OC-6-11)- (9CI)  
(CA INDEX NAME)

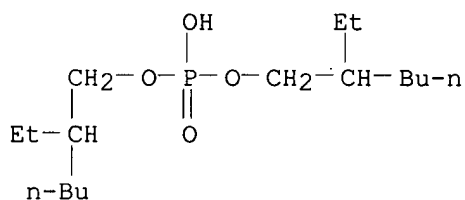


- RN 35656-11-2 HCAPLUS
- CN Phosphoric acid, bis(2-ethylhexyl) ester, neodymium(3+) salt, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 38326-04-4

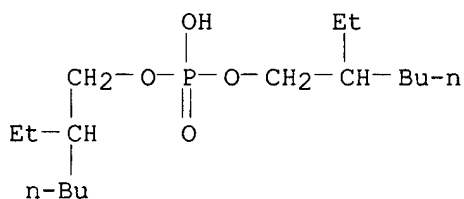
CMF C16 H35 O4 P . 1/3 Nd



● 1/3 Nd(III)

RN 38326-06-6 HCAPLUS

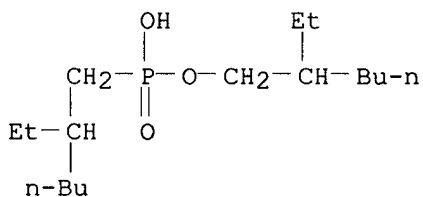
CN Phosphoric acid, bis(2-ethylhexyl) ester, yttrium(3+) salt (9CI) (CA INDEX NAME)



● 1/3 Y(III)

RN 79321-05-4 HCAPLUS

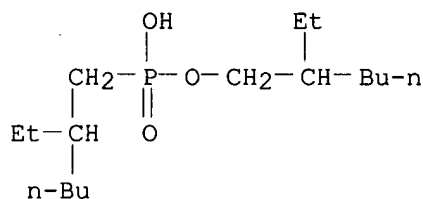
CN Phosphonic acid, (2-ethylhexyl)-, mono(2-ethylhexyl) ester, neodymium(3+) salt (9CI) (CA INDEX NAME)



● 1/3 Nd(III)

RN 101135-91-5 HCAPLUS

CN Phosphonic acid, (2-ethylhexyl)-, mono(2-ethylhexyl) ester, yttrium(3+) salt (9CI) (CA INDEX NAME)



● 1/3 Y(III)

IT 54335-37-4P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(prepn. and characterization of chloromethylthiirane-epichlorohydrin  
copolymer by rare earth coordination catalysts)

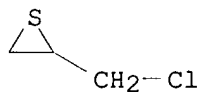
RN 54335-37-4 HCAPLUS

CN Oxirane, (chloromethyl)-, polymer with (chloromethyl)thiirane (9CI) (CA  
INDEX NAME)

CM 1

CRN 3221-15-6

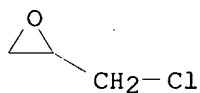
CMF C3 H5 Cl S



CM 2

CRN 106-89-8

CMF C3 H5 Cl O



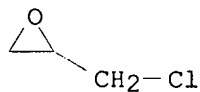
IT 106-89-8, reactions

RL: RCT (Reactant)

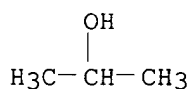
(reactivity ratio in copolymn. of chloromethylthiirane with  
epichlorohydrin by rare earth coordination catalysts)

RN 106-89-8 HCAPLUS

CN Oxirane, (chloromethyl)- (9CI) (CA INDEX NAME)



AN 1996:701186 HCAPLUS  
 DN 126:8935  
 TI Polymerization of **ethylene oxide** using yttrium isopropoxide  
 AU Choi, Young K.; Stevels, Willem M.; Ankone, Marc J. K.; Dijkstra, Pieter J.; Kim, Sung W.; Feijen, Jan  
 CS Department Chemical Technology, University Twente, Enschede, 7500 AE, Neth.  
 SO Macromol. Chem. Phys. (1996), 197(11), 3623-3629  
 CODEN: MCHPES; ISSN: 1022-1352  
 PB Huethig & Wepf  
 DT Journal  
 LA English  
 CC 37-3 (**Plastics** Manufacture and Processing)  
 AB Well defined poly(ethylene oxides) were prepd. using yttrium isopropoxide as an initiator. End group anal. using <sup>1</sup>H- and <sup>13</sup>C NMR spectroscopy revealed that only polymers with iso-Pr ether and hydroxyl end groups were produced. The mol. wt. is controlled by the initial amt. of initiator added and low polydispersity polymer (.hivin.Mw/.hivin.Mn .apprxeq. 1.1) was isolated. Sequential polymn. indicated the suitability of this initiator for macromol. engineering.  
 ST polymn **ethylene oxide** yttrium isopropoxide catalyst  
 IT **Ring opening** polymerization  
     **Ring opening** polymerization catalysts  
     (polymn. of **ethylene oxide** using yttrium isopropoxide)  
 IT 2172-12-5, Yttrium isopropoxide  
 RL: CAT (Catalyst use); USES (Uses)  
     (polymn. of **ethylene oxide** using)  
 IT 32238-60-1P, Polyethylene glycol isopropyl ether  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
     (polymn. of **ethylene oxide** using yttrium isopropoxide)  
 IT 2172-12-5, Yttrium isopropoxide  
 RL: CAT (Catalyst use); USES (Uses)  
     (polymn. of **ethylene oxide** using)  
 RN 2172-12-5 HCAPLUS  
 CN 2-Propanol, yttrium(3+) salt (9CI) (CA INDEX NAME)



1/3 Y(III)

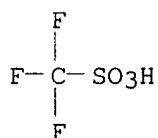
L28 ANSWER 16 OF 38 HCAPLUS COPYRIGHT 2001 ACS  
 AN 1996:431581 HCAPLUS  
 DN 125:59381  
 TI Polymerization of cyclic ethers using selected metal compound catalysts  
 IN Drysdale, Neville Everton  
 PA E.I. Du Pont De Nemours and Company, USA  
 SO PCT Int. Appl., 25 pp.  
 CODEN: PIXXD2  
 DT Patent

LA English  
 IC ICM C08G065-10  
 ICS C08G065-20  
 CC 35-3 (Chemistry of Synthetic High Polymers)  
 Section cross-reference(s): 67

FAN.CNT 2

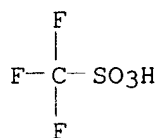
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9613540	A1	19960509	WO 1995-US13701	19951024
	W: AL, AM, AU, BB, BG, BR, BY, CA, CN, CZ, EE, FI, GE, HU, IS, JP, KG, KP, KR, KZ, LK, LR, LT, LV, MD, MG, MK, MN, MX, NO, NZ, PL, RO, RU, SG, SI, SK, TJ, TM, TT, UA, UZ, VN				
	RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	AU 9538971	A1	19960523	AU 1995-38971	19951024
	EP 788525	A1	19970813	EP 1995-938289	19951024
	R: DE, ES, GB, NL				
	CN 1179786	A	19980422	CN 1995-195937	19951024
	JP 10508063	T2	19980804	JP 1995-514688	19951024
	EP 1046663	A2	20001025	EP 2000-202233	19951024
	EP 1046663	A3	20010912		
	R: DE, ES, FR, GB, NL				
PRAI	US 1994-331305	A	19941028		
	EP 1995-938289	A3	19951024		
	WO 1995-US13701	W	19951024		
OS	MARPAT 125:59381				
AB	<b>Oxiranes</b> , oxetanes, oxepanes, dioxolanes, trioxanes, and tetrahydrofurans are polycond. in the presence of a metal salt optionally complexed with a neutral ligand and an accelerator such as a vinyl ester or a phosphorous compd. These catalysts provide <b>polyethers</b> with sufficiently high no.-av. mol. wts. (Mn) for use usually in the diol form in manuf. of other polymers. Thus, polymn. of THF in the presence of di-Et chlorophosphite and ytterbium triflate gave polymer with Mn 10,200.				
ST	cyclic ether polymn catalyst; ytterbium triflate catalyst THF polymn; chlorophosphite diethyl catalyst THF polymn; polyoxyalkylene manuf catalyst; THF polymn catalyst metal compd; trioxane polymn catalyst metal compd; dioxolane polymn catalyst metal compd; phosphorous compd polymn catalyst oxepane; vinyl ester polymn catalyst oxetane; metal compd polymn catalyst <b>oxirane</b>				
IT	Polyoxyalkylenes, preparation RL: IMF (Industrial manufacture); PREP (Preparation) (polymn. of cyclic ethers using selected metal compd. catalysts)				
IT	Esters, uses RL: CAT (Catalyst use); USES (Uses) (vinyl, cocatalysts; polymn. of cyclic ethers using selected metal compd. catalysts)				
IT	Polymerization catalysts (ring-opening, polymn. of cyclic ethers using selected metal compd. catalysts)				
IT	108-05-4, Vinyl acetate, uses 589-57-1, Diethyl chlorophosphite 940-71-6 1707-03-5, Diphenylphosphinic acid RL: CAT (Catalyst use); USES (Uses) (cocatalyst; polymn. of cyclic ethers using selected metal compd. catalysts)				
IT	94-04-2, Vinyl 2-ethylhexanoate 34622-08-7, Neodymium triflate 52093-26-2, Lanthanum triflate 52093-30-8, Yttrium triflate 54761-04-5, Ytterbium triflate 62086-02-6 88189-03-1 89672-77-5 139177-62-1, Dysprosium triflate 139177-64-3, Erbium triflate				

RL: **CAT (Catalyst use)**; USES (Uses)  
 (polymn. of cyclic ethers using selected metal compd. catalysts)  
 IT 24979-97-3P, THF homopolymer 25190-06-1P  
 RL: IMF (Industrial manufacture); PREP (Preparation)  
 (polymn. of cyclic ethers using selected metal compd. catalysts)  
 IT 34622-08-7, Neodymium triflate 52093-26-2, Lanthanum  
 triflate 52093-30-8, Yttrium triflate 54761-04-5,  
 Ytterbium triflate 139177-62-1, Dysprosium triflate  
 139177-64-3, Erbium triflate  
 RL: **CAT (Catalyst use)**; USES (Uses)  
 (polymn. of cyclic ethers using selected metal compd. catalysts)  
 RN 34622-08-7 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, neodymium(3+) salt (9CI) (CA INDEX  
 NAME)



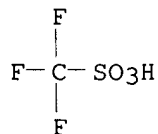
1/3 Nd(III)

RN 52093-26-2 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lanthanum(3+) salt (9CI) (CA INDEX  
 NAME)



1/3 La(III)

RN 52093-30-8 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, yttrium(3+) salt (9CI) (CA INDEX NAME)

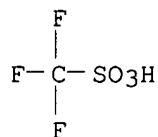


1/3 Y(III)

RN 54761-04-5 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, ytterbium(3+) salt (9CI) (CA INDEX  
 NAME)



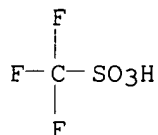
NAME)



1/3 Yb(III)

RN 139177-62-1 HCAPLUS

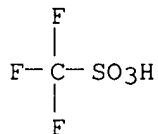
CN Methanesulfonic acid, trifluoro-, dysprosium(3+) salt (9CI) (CA INDEX NAME)



1/3 Dy(III)

RN 139177-64-3 HCAPLUS

CN Methanesulfonic acid, trifluoro-, erbium(3+) salt (9CI) (CA INDEX NAME)



1/3 Er(III)

L28 ANSWER 17 OF 38 HCAPLUS COPYRIGHT 2001 ACS

AN 1996:195143 HCAPLUS

DN 124:233228

TI A Versatile and Highly Efficient Catalyst System for the Preparation of Polyesters Based on Lanthanide Tris(2,6-di-tert-butylphenolate)s and Various Alcohols

AU Stevels, Willem M.; Ankone, Marc J. K.; Dijkstra, Pieter J.; Feijen, Jan  
CS Department of Chemical Technology, University of Twente, Enschede, 7500 AE, Neth.SO Macromolecules (1996), 29(9), 3332-3  
CODEN: MAMOBX; ISSN: 0024-9297

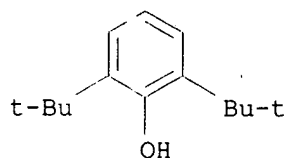
DT Journal

LA English

CC 35-3 (Chemistry of Synthetic High **Polymers**)

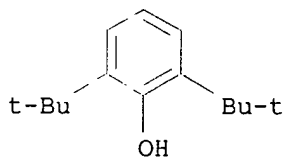
KATHLEEN FULLER EIC 1700/LAW LIBRARY 308-4290

- AB The polymn. of L-lactide, .epsilon.-caprolactone and .delta.-valerolactone in the presence of lanthanide tris(2,6-di-tert-butylphenolate) and alcs. proceeds smoothly to the equil. conversion in dichloromethane to yield a narrow mol. wt. distribution polyester within minutes. The end group identity of the polymer prepd. is solely detd. by the identity of the alc. added. Block copolymers can be prepd. by sequential introduction of different monomers or by using a hydroxyl functionalized macroinitiator.
- ST yttrium ditertbutylphenolate alc catalyst lactide polymn; lanthanum ditertbutylphenolate alc catalyst caprolactone polymn; valerolactone polymn yttrium ditertbutylphenolate alc catalyst; block polyester prepn yttrium phenolate catalyst; **ring opening** polymn  
yttrium phenolate catalyst
- IT Alcohols, uses  
RL: CAT (Catalyst use); USES (Uses)  
(lanthanide tris(2,6-di-tert-butylphenolate)-alc. catalyst system for the prepn. of polyesters)
- IT Polyesters, preparation  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(lanthanide tris(2,6-di-tert-butylphenolate)-alc. catalyst system for the prepn. of polyesters)
- IT Polyesters, preparation  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(block, lanthanide tris(2,6-di-tert-butylphenolate)-alc. catalyst system for the prepn. of polyesters)
- IT Polymerization catalysts  
(**ring-opening**, living; lanthanide tris(2,6-di-tert-butylphenolate)-alc. catalyst system for the prepn. of polyesters)
- IT 111821-20-6P, .epsilon.-Caprolactone-L-Lactide block copolymer  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(diblock; lanthanide tris(2,6-di-tert-butylphenolate)-alc. catalyst system for the prepn. of polyesters)
- IT 67-63-0, 2-Propanol, uses 71-36-3, Butanol, uses 75-65-0, tert-Butanol, uses 107-21-1, Ethylene glycol, uses 108-01-0, Dimethylaminoethanol 109-86-4, Methoxyethanol **113266-70-9**, Yttrium tris(2,6-di-tert-butylphenolate) **121118-91-0**, Lanthanum tris(2,6-di-tert-butylphenolate)  
RL: **CAT (Catalyst use)**; USES (Uses)  
(lanthanide tris(2,6-di-tert-butylphenolate)-alc. catalyst system for the prepn. of polyesters)
- IT 24980-41-4P, .epsilon.-Caprolactone homopolymer 25248-42-4P, .epsilon.-Caprolactone homopolymer, sru 26161-42-2P, L-Lactide homopolymer, sru 26354-94-9P, .delta.-Valerolactone homopolymer 26499-05-8P, .delta.-Valerolactone homopolymer, sru 33135-50-1P, L-Lactide homopolymer  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(lanthanide tris(2,6-di-tert-butylphenolate)-alc. catalyst system for the prepn. of polyesters)
- IT **149479-29-8P**, L-Lactide-oxirane block copolymer  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(triblock; lanthanide tris(2,6-di-tert-butylphenolate)-alc. catalyst system for the prepn. of polyesters)
- IT **113266-70-9**, Yttrium tris(2,6-di-tert-butylphenolate) **121118-91-0**, Lanthanum tris(2,6-di-tert-butylphenolate)  
RL: **CAT (Catalyst use)**; USES (Uses)  
(lanthanide tris(2,6-di-tert-butylphenolate)-alc. catalyst system for the prepn. of polyesters)
- RN **113266-70-9** HCAPLUS
- CN Phenol, 2,6-bis(1,1-dimethylethyl)-, yttrium(3+) salt (9CI) (CA INDEX NAME)



1/3 Y(III)

RN 121118-91-0 HCAPLUS  
 CN Phenol, 2,6-bis(1,1-dimethylethyl)-, lanthanum(3+) salt (9CI) (CA INDEX NAME)



1/3 La(III)

IT 149479-29-8P, L-Lactide-oxirane block copolymer  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (triblock; lanthanide tris(2,6-di-tert-butylphenolate)-alc. catalyst  
 system for the prepn. of polyesters)

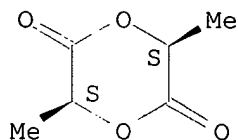
RN 149479-29-8 HCAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, polymer with oxirane,  
 block (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6  
 CMF C6 H8 O4  
 CDES 1:3S2:CIS

Absolute stereochemistry.



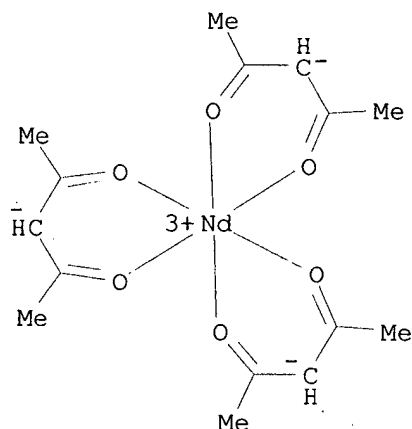
CM 2

CRN 75-21-8  
 CMF C2 H4 O

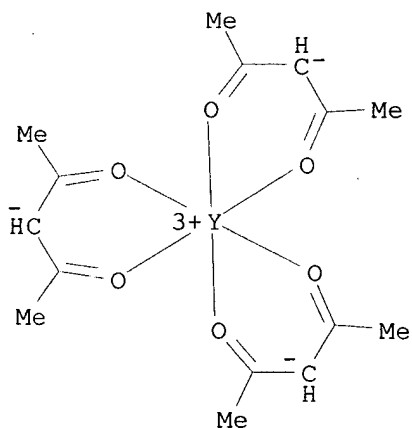


- L28 ANSWER 18 OF 38 HCAPLUS COPYRIGHT 2001 ACS  
 AN 1996:88143 HCAPLUS  
 DN 124:118109  
 TI Copolymerization of (chloromethyl)thiirane with propylene oxide by rare earth coordination catalysts  
 AU Sun, Wei-Lin; Shen, Zhi-Quan; Zhang, Yi-Feng  
 CS Dep. Polymer Sci. Eng., Zhejiang Univ., Hangzhou, 310027, Peop. Rep. China  
 SO Gaodeng Xuexiao Huaxue Xuebao (1996), 17(1), 137-41  
 CODEN: KTHPDM; ISSN: 0251-0790  
 DT Journal  
 LA Chinese  
 CC 35-3 (Chemistry of Synthetic High Polymers)  
 AB Rare earth coordination catalysts, esp. Y(P204)3-Al(iso-Bu)3-H2O system, are effective catalysts for prepg. high-mol.-wt. ([.eta.] about 1.0 dL/g) (chloromethyl)thiirane-propylene oxide copolymer in a high yield (50%). The catalytic efficiency of Y(P204)3-Al(iso-Bu)3-H2O system reached 6000 g/mol Y. The copolymer structure was characterized by IR, NMR, GPC. The reactivity ratio were obtained as  $r_1 = 0.41$  (chloromethylthiirane) and  $r_2 = 1.37$  (propylene oxide) resp.  
 ST polymn chloromethylthiirane propylene oxide; reactivity ratio polymn chloromethylthiirane propylene oxide; yttrium catalyst polymn chloromethylthiirane propylene oxide; neodymium catalyst polymn chloromethylthiirane propylene oxide  
 IT Solvent effect  
     (on copolymn. of (chloromethyl)thiirane with propylene oxide)  
 IT Naphthenic acids, uses  
     RL: CAT (Catalyst use); USES (Uses)  
     (neodymium salts, rare earth compd.-triisobutylaluminum-water system catalyst for polymn. of (chloromethyl)thiirane with propylene oxide)  
 IT Polymerization catalysts  
     (ring-opening, rare earth compd.-triisobutylaluminum-water system catalyst for polymn. of (chloromethyl)thiirane with propylene oxide)  
 IT Reactivity ratio in polymerization  
     (ring-opening, reactivity ratio in polymn. of (chloromethyl)thiirane with propylene oxide in presence of rare earth compd. catalysts)  
 IT 100-99-2, Triisobutylaluminum, uses 7440-00-8D, Neodymium, naphthenates 7732-18-5, Water, uses 14589-38-9, Neodymium tris(acetylacetonate) 15554-47-9, Yttrium tris(acetylacetonate) 38326-04-4 38326-06-6 79321-05-4 101135-91-5  
     RL: CAT (Catalyst use); USES (Uses)  
     (rare earth compd.-triisobutylaluminum-water system catalyst for polymn. of (chloromethyl)thiirane with propylene oxide)  
 IT 173324-64-6  
     RL: PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); PROC (Process)  
     (rare earth compd.-triisobutylaluminum-water system catalyst for polymn. of (chloromethyl)thiirane with propylene oxide)  
 IT 75-56-9, reactions 3221-15-6, (Chloromethyl)thiirane  
     RL: PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); PROC (Process)  
     (reactivity ratio in polymn. of (chloromethyl)thiirane with propylene

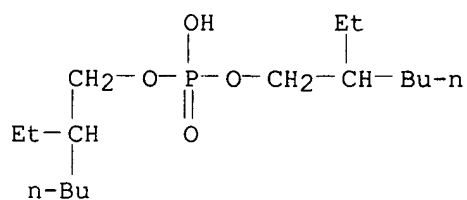
oxide in presence of rare earth compd. catalysts)  
 IT 14589-38-9, Neodymium tris(acetylacetonate) 15554-47-9,  
 Yttrium tris(acetylacetonate) 38326-04-4 38326-06-6  
 79321-05-4 101135-91-5  
 RL: CAT (Catalyst use); USES (Uses)  
 (rare earth compd.-triisobutylaluminum-water system catalyst for  
 polymn. of (chloromethyl)thiirane with propylene oxide)  
 RN 14589-38-9 HCAPLUS  
 CN Neodymium, tris(2,4-pentanedionato-.kappa.O,.kappa.O')-, (OC-6-11)- (9CI)  
 (CA INDEX NAME)



RN 15554-47-9 HCAPLUS  
 CN Yttrium, tris(2,4-pentanedionato-.kappa.O,.kappa.O')-, (OC-6-11)- (9CI)  
 (CA INDEX NAME)

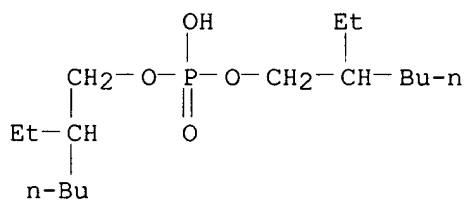


RN 38326-04-4 HCAPLUS  
 CN Phosphoric acid, bis(2-ethylhexyl) ester, neodymium(3+) salt (9CI) (CA  
 INDEX NAME)



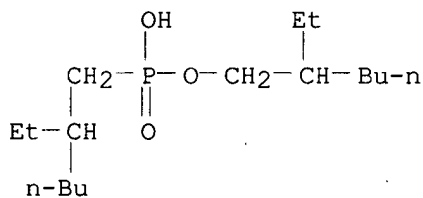
● 1/3 Nd(III)

RN 38326-06-6 HCAPLUS  
 CN Phosphoric acid, bis(2-ethylhexyl) ester, yttrium(3+) salt (9CI) (CA INDEX NAME)



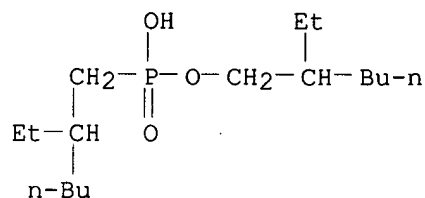
● 1/3 Y(III)

RN 79321-05-4 HCAPLUS  
 CN Phosphonic acid, (2-ethylhexyl)-, mono(2-ethylhexyl) ester, neodymium(3+) salt (9CI) (CA INDEX NAME)



● 1/3 Nd(III)

RN 101135-91-5 HCAPLUS  
 CN Phosphonic acid, (2-ethylhexyl)-, mono(2-ethylhexyl) ester, yttrium(3+) salt (9CI) (CA INDEX NAME)



● 1/3 Y(III)

IT 173324-64-6

RL: PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); PROC (Process)  
(rare earth compd.-triisobutylaluminum-water system catalyst for polymn. of (chloromethyl)thiirane with propylene oxide)

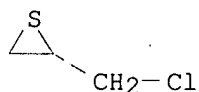
RN 173324-64-6 HCAPLUS

CN Oxirane, methyl-, polymer with (chloromethyl)thiirane (9CI) (CA INDEX NAME)

CM 1

CRN 3221-15-6

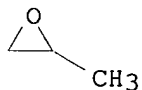
CMF C3 H5 Cl S



CM 2

CRN 75-56-9

CMF C3 H6 O

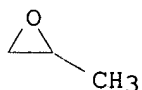


IT 75-56-9, reactions

RL: PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); PROC (Process)  
(reactivity ratio in polymn. of (chloromethyl)thiirane with propylene oxide in presence of rare earth compd. catalysts)

RN 75-56-9 HCAPLUS

CN Oxirane, methyl- (9CI) (CA INDEX NAME)



L28 ANSWER 19 OF 38 HCAPLUS COPYRIGHT 2001 ACS

AN 1995:818605 HCAPLUS

DN 123:229367

TI Preparation of block **polyether**-polyesters from THF or 3-methyltetrahydrofuran and polycarboxylic acids in the presence of metal perfluorosulfonate catalysts

IN Drysdale, Neville Everton; Citron, Joel David

PA du Pont de Nemours, E. I., and Co., USA

SO PCT Int. Appl., 28 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C08G063-42

ICS C08G063-58; C08G063-685

CC 35-5 (Chemistry of Synthetic High **Polymers**)

FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9511267	A1	19950427	WO 1994-US11728	19941020
	W: BR, JP, KR				
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	EP 724606	A1	19960807	EP 1995-900999	19941020
	EP 724606	B1	20010816		
	R: DE, ES, FR, GB, IT, NL				
	JP 09504047	T2	19970422	JP 1994-512103	19941020
	BR 9407858	A	19970520	BR 1994-7858	19941020
	US 5541346	A	19960730	US 1995-424918	19950419
	US 5635585	A	19970603	US 1995-424675	19950419
	US 5770678	A	19980623	US 1996-762813	19961209
PRAI	US 1993-141160	A	19931021		
	US 1994-198024	A	19940217		
	US 1992-964313	B2	19921021		
	US 1993-21368	B2	19930223		
	US 1993-93119	B2	19930716		
	US 1993-93243	B2	19930716		
	US 1994-283108	A3	19940729		
	WO 1994-US11728	W	19941020		
	US 1995-424675	A1	19950419		

AB Block **polyether**-polyesters derived from dicarboxylic acids (and derivs.) and THF (or a THF deriv.) are prepd. with a repeating unit of general structure [(CHR<sub>1</sub>CR<sub>2</sub>R<sub>3</sub>CHR<sub>4</sub>)nC(:O)AC(:O)O], in which R<sub>1</sub>-R<sub>4</sub> are, independently, H or C<sub>1</sub>-20-hydrocarbyl, n > 1, A is hydrocarbylene or substituted hydrocarbylene contg. imide, amide, urea, and urethane functional groups, and A is bound to an ester group through a carbon atom. More specifically, the repeating unit is of general formula [R<sub>6</sub>-E-C(:O)NH-R<sub>7</sub>-NHC(:O)-E-[R<sub>8</sub>-E-C(:O)NH-R<sub>7</sub>-NHN(:O)-E-]<sub>m</sub>-R<sub>6</sub>], in which R<sub>6</sub>-R<sub>8</sub> are c<sub>2</sub>-25-hydrocarbyl, E is O or NR<sub>10</sub> (R<sub>10</sub> = H or C<sub>1</sub>-20-hydrocarbyl, and m = 0-10). Preferably, the tetrahydrofurans used are THF and 3-methyltetrahydrofuran. The polymers are prepd. in the presence of metal perfluoroalkylsulfonate catalysts of general formula MZsQt, in which M is a metal, Z is a R<sub>5</sub>OSO<sub>2</sub>- (R = C<sub>1</sub>-12-perfluoroalkyl), and s = 1-6, depending on the metal. Several polymers, some of which are novel, were prepd. and were useful as thermoplastic elastomers, spandex fibers, or urethane rubber.

ST **polyether** polyester THF dicarboxylic acid;  
perfluoroalkanesulfonate THF **polyether** polyester

IT Sulfonates

RL: CAT (Catalyst use); USES (Uses)

(C<sub>1</sub>-12-perfluoroalkane; prepn. of block **polyether**-polyesters



- from THF or 3-methyltetrahydrofuran and polycarboxylic acids)
- IT Sulfonic acids, uses  
 RL: CAT (Catalyst use); USES (Uses)  
 (perfluoro-C1-12-alkane, rare earth metal salts; for prepn. of block **polyether**-polyesters from THF or 3-methyltetrahydrofuran and polycarboxylic acids)
- IT Polymerization catalysts  
 (block, **ring-opening**, metal perfluorosulfonates; prepn. of block **polyether**-polyesters from THF or 3-methyltetrahydrofuran and polycarboxylic acids)
- IT **Polyethers**, preparation  
 RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)  
 (polyamide-, block, prepn. of **polyether**-polyesters from THF or 3-methyltetrahydrofuran and polycarboxylic acids)
- IT **Polyethers**, preparation  
 RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)  
 (polyester-, block, prepn. of **polyether**-polyesters from THF or 3-methyltetrahydrofuran and polycarboxylic acids)
- IT Urethane polymers, preparation  
 RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)  
 (**polyether**-, block; prepn. of **polyether**-polyesters from THF or 3-methyltetrahydrofuran and polycarboxylic acids)
- IT Polyamides, preparation  
 Polyesters, preparation  
 Polyimides, preparation  
 Polyureas  
 RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)  
 (**polyether**-, block, \* or 3-methyltetrahydrofuran and polycarboxylic acids; Polyesters, preparation RTPolyimides, preparation IROL)
- IT **Polyethers**, preparation  
 RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)  
 (polyimide-, block, prepn. of **polyether**-polyesters from THF or 3-methyltetrahydrofuran and polycarboxylic acids)
- IT **Polyethers**, preparation  
 RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)  
 (polyurea-, block, prepn. of **polyether**-polyesters from THF or 3-methyltetrahydrofuran and polycarboxylic acids)
- IT 7429-90-5D, Aluminum, perfluoroalkanesulfonates 7439-88-5D, Iridium, perfluoroalkanesulfonates 7439-89-6D, Iron, perfluoroalkanesulfonates 7439-92-1D, Lead, perfluoroalkanesulfonates 7439-97-6D, Mercury, perfluoroalkanesulfonates 7439-98-7D, Molybdenum, perfluoroalkanesulfonates 7440-03-1D, Niobium, perfluoroalkanesulfonates 7440-04-2D, Osmium, perfluoroalkanesulfonates 7440-05-3D, Palladium, perfluoroalkanesulfonates 7440-06-4D, Platinum, perfluoroalkanesulfonates 7440-15-5D, Rhenium, perfluoroalkanesulfonates 7440-16-6D, Rhodium, perfluoroalkanesulfonates 7440-18-8D, Ruthenium, perfluoroalkanesulfonates 7440-20-2D, Scandium, perfluoroalkanesulfonates 7440-22-4D, Silver, perfluoroalkanesulfonates 7440-24-6D, Strontium, perfluoroalkanesulfonates 7440-25-7D, Tantalum, perfluoroalkanesulfonates 7440-30-4D, Thulium, perfluoroalkanesulfonates 7440-31-5D, Tin, perfluoroalkanesulfonates 7440-32-6D, Titanium, perfluoroalkanesulfonates 7440-33-7D, Tungsten, perfluoroalkanesulfonates 7440-36-0D, Antimony,

perfluoroalkanesulfonates 7440-38-2D, Arsenic, perfluoroalkanesulfonates 7440-39-3D, Barium, perfluoroalkanesulfonates 7440-43-9D, Cadmium, perfluoroalkanesulfonates 7440-47-3D, Chromium, perfluoroalkanesulfonates 7440-48-4D, Cobalt, perfluoroalkanesulfonates 7440-55-3D, Gallium, perfluoroalkanesulfonates 7440-56-4D, Germanium, perfluoroalkanesulfonates 7440-57-5D, Gold, perfluoroalkanesulfonates 7440-58-6D, Hafnium, perfluoroalkanesulfonates 7440-62-2D, Vanadium, perfluoroalkanesulfonates 7440-65-5D, Yttrium, perfluoroalkanesulfonates 7440-66-6D, Zinc, perfluoroalkanesulfonates 7440-67-7D, Zirconium, perfluoroalkanesulfonates 7440-69-9D, Bismuth, perfluoroalkanesulfonates 7440-74-6D, Indium, perfluoroalkanesulfonates **54761-04-5**, Ytterbium triflate

RL: **CAT (Catalyst use)**; USES (Uses)

(for prepn. of block **polyether**-polyesters from THF or 3-methyltetrahydrofuran and polycarboxylic acids)

IT 168197-84-0P 168197-87-3P

RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)

(prepn. and polymn. of)

IT 109-99-9DP, block **polyether**-polyesters 13423-15-9DP, block **polyether**-polyesters 168197-74-8P 168197-75-9P 168197-76-0P 168197-77-1P 168197-79-3P 168197-80-6P 168197-81-7P 168197-82-8P 168197-83-9P 168197-85-1P 168197-86-2P 168197-88-4P 168471-72-5P 168471-73-6P

RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)

(prepn. of block **polyether**-polyesters from THF or 3-methyltetrahydrofuran and polycarboxylic acids)

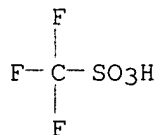
IT **54761-04-5**, Ytterbium triflate

RL: **CAT (Catalyst use)**; USES (Uses)

(for prepn. of block **polyether**-polyesters from THF or 3-methyltetrahydrofuran and polycarboxylic acids)

RN **54761-04-5** HCAPLUS

CN Methanesulfonic acid, trifluoro-, ytterbium(3+) salt (9CI) (CA INDEX NAME)



1/3 Yb(III)

L28 ANSWER 20 OF 38 HCAPLUS COPYRIGHT 2001 ACS

AN 1995:786073 HCAPLUS

DN 123:199492

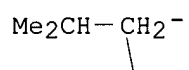
TI Syntheses and characterization of [(.mu.-CF3CO2)2Ln(.mu.-CF3CHO2)AlR2.2THF]2 and their catalytic activities for polymerization of some polar monomers

AU Jin, Ying-Tai; Li, Feng-Fu; Lin, Yong-Hua; Pei, Feng-Kui; Wang, Fo-Song; Ren, Ji-Min; Sun, Yu-Fang

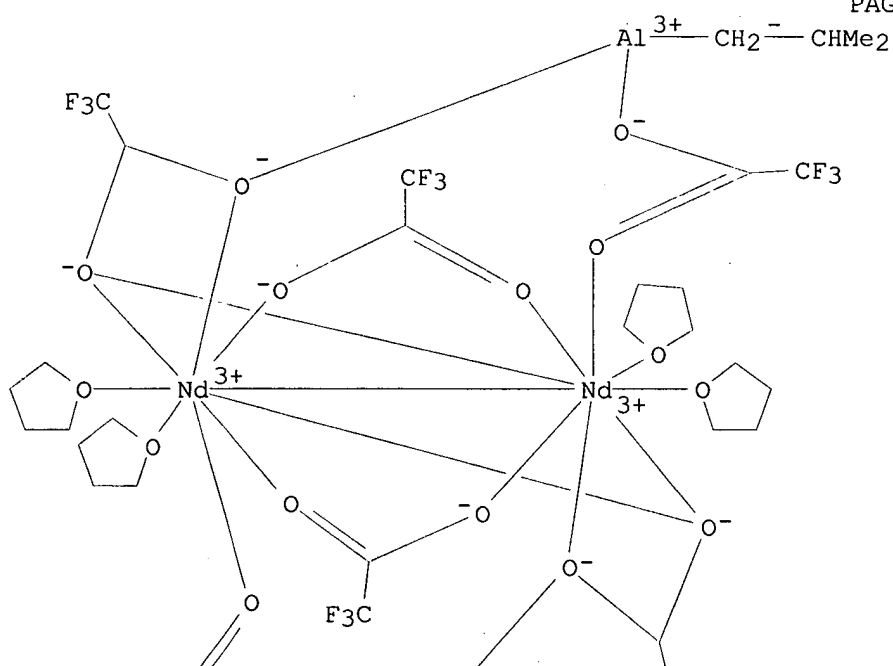
CS Changchun Inst. Appl. Chem., Chinese Acad. Sci., Changchun, 130022, Peop. Rep. China

- SO Huaxue Xuebao (1995), 53(7), 702-9  
CODEN: HHHPA4; ISSN: 0567-7351
- DT Journal
- LA Chinese
- CC 35-3 (Chemistry of Synthetic High Polymers)
- AB Three new bimetallic complexes were prepd. and crystd. by reactions of (CF<sub>3</sub>CO<sub>2</sub>)<sub>3</sub>Ln with R<sub>1</sub>AlR<sub>2</sub> (Ln = Nd and Y, R<sub>1</sub> = H, R = iso-C<sub>4</sub>H<sub>9</sub>; Ln = Eu, R = R<sub>1</sub> = C<sub>2</sub>H<sub>5</sub>) in THF soln., and their crystal structures were detd. by X-ray diffraction method. The structures and the questions on valence state and noncoplanarity in the structures were confirmed and cracked by means of <sup>1</sup>H NMR and <sup>13</sup>C NMR spectra, esp. by <sup>13</sup>C-<sup>1</sup>H COSY 2D NMR technique. A general formula of mols. of the three rare earth complexes was defined as follows: [(μ.-CF<sub>3</sub>CO<sub>2</sub>)<sub>2</sub>Ln(μ.-CF<sub>3</sub>CHO<sub>2</sub>)AlR<sub>2</sub>.2THF]<sub>2</sub>. A mechanism on the formation of the new complexes was also proposed through the following five steps: alkylating, .beta.-elimination (or hydrogenation), hydrogen transfer, linkage and assocn. Both Y-Al and Eu-Al complexes function as a catalyst in polymn. of Me methacrylate (I) and epichlorohydrin (II). The polymer obtained from I monomer is mainly syndiotactic chain structure and the polymn. of II shows higher catalytic activity. The Y-Al complex also capable of ring-opening polymn. of THF in case of adding a small amt. of II and an oxonium ion mechanism of THF polymn. was suggested from the anal. of THF polymer terminal.
- ST neodymium aluminum polymn catalyst; yttrium aluminum polymn catalyst; europium aluminum polymn catalyst; PMMA prepn catalyst lanthanide; polyepichlorohydrin prepn catalyst lanthanide; polytetrahydrofuran prepn catalyst lanthanide
- IT Polymerization catalysts  
(prepn. and characterization of neodymium-, europium- and yttrium-aluminum and their catalytic activities for polymn. of some polar monomers)
- IT Polyoxyalkylenes, preparation  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. and characterization of neodymium-, europium- and yttrium-aluminum and their catalytic activities for polymn. of some polar monomers)
- IT 168068-97-1P 168068-98-2P 168068-99-3P  
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(prepn. and characterization of neodymium-, europium- and yttrium-aluminum and their catalytic activities for polymn. of some polar monomers)
- IT 9011-14-7P, PMMA 24969-06-0P, Epichlorohydrin homopolymer 24979-97-3P, THF homopolymer 25190-06-1P 61710-61-0P, Epichlorohydrin homopolymer, sru  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. and characterization of neodymium-, europium- and yttrium-aluminum and their catalytic activities for polymn. of some polar monomers)
- IT 168068-97-1P 168068-98-2P 168068-99-3P  
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(prepn. and characterization of neodymium-, europium- and yttrium-aluminum and their catalytic activities for polymn. of some polar monomers)
- RN 168068-97-1 HCAPLUS
- CN Neodymium, bis[bis(2-methylpropyl)aluminum]tetrakis(tetrahydrofuran)tetrakis[μ.-[trifluoroacetato-κO:κO']]bis[μ.<sub>3</sub>-[2,2,2-trifluoro-1,1-ethanediolato(2-)-κO:κO,κO':κO']]di-, (Nd-Nd) (9CI) (CA INDEX NAME)

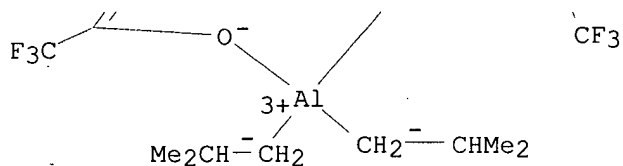
PAGE 1-A



PAGE 2-A

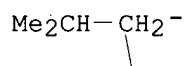


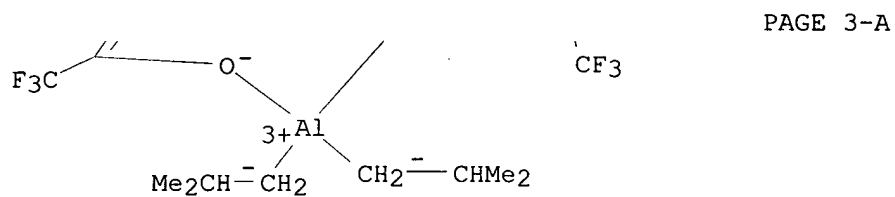
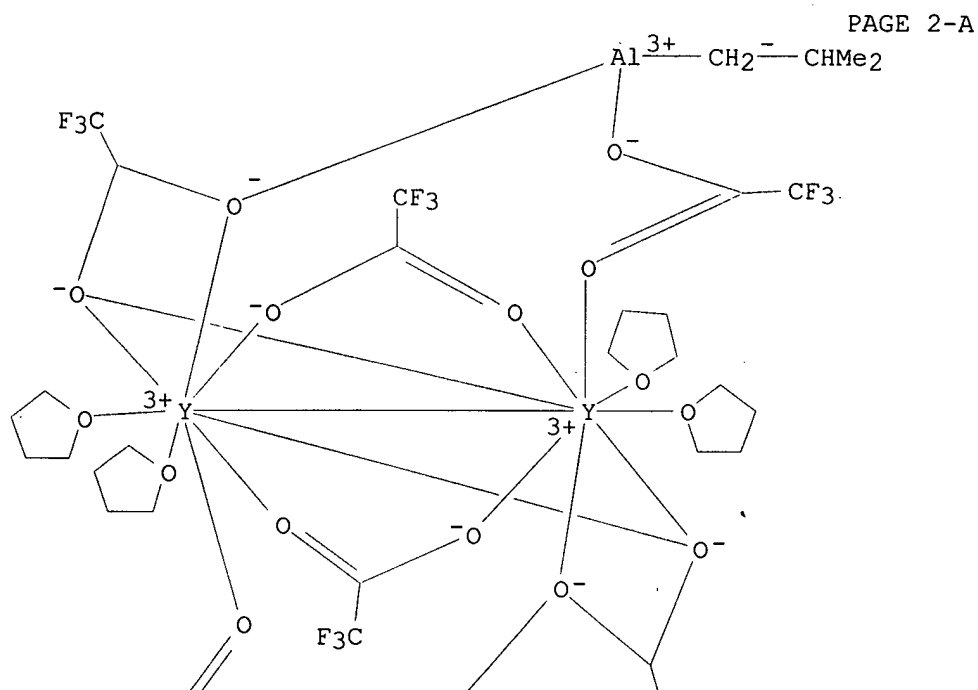
PAGE 3-A



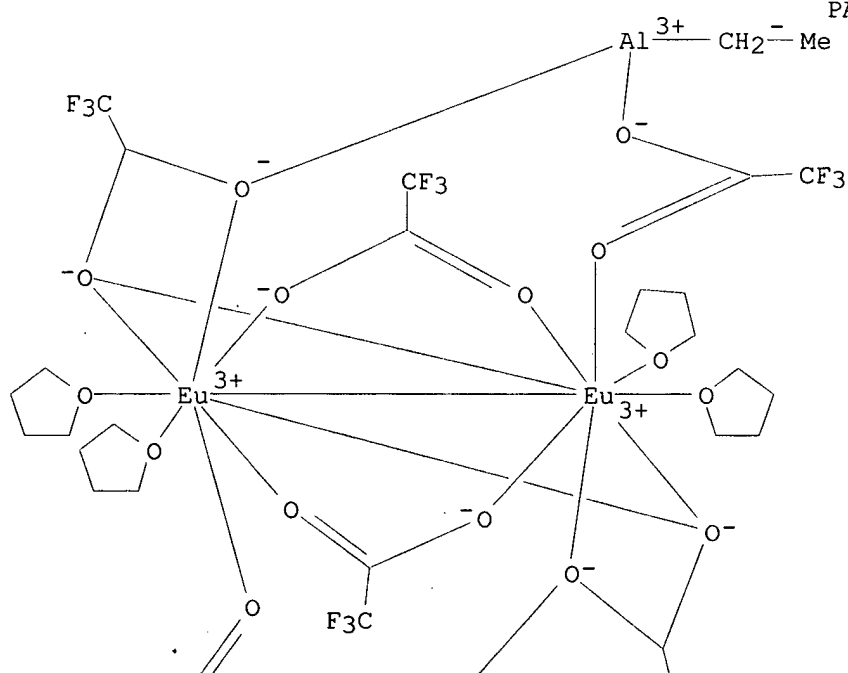
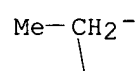
RN 168068-98-2 HCAPLUS  
 CN Yttrium, bis[bis(2-methylpropyl)aluminum]tetrakis(tetrahydrofuran)tetrakis  
 [.mu.-(trifluoroacetato-.kappa.O:.kappa.O')]]bis[.mu.3-[2,2,2-trifluoro-1,1-  
 ethanediolato(2-)-.kappa.O:.kappa.O,.kappa.O':.kappa.O']]]di-, (Y-Y) (9CI)  
 (CA INDEX NAME)

PAGE 1-A

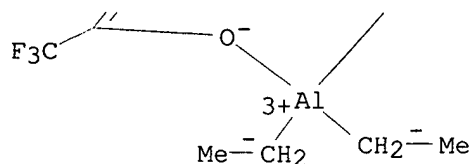




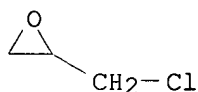
RN 168068-99-3 HCAPLUS  
 CN Europium, bis(diethylaluminum)tetrakis(tetrahydrofuran)tetrakis[.mu.-(trifluoroacetato-.kappa.O:.kappa.O')]]bis[.mu.3-[2,2,2-trifluoro-1,1-ethanediolato(2-)-.kappa.O:.kappa.O,.kappa.O':.kappa.O']]]di- (9CI) (CA INDEX NAME)



PAGE 3-A



IT 24969-06-0P, Epichlorohydrin homopolymer  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (prepn. and characterization of neodymium-, europium- and  
 yttrium-aluminum and their catalytic activities for polymn. of some  
 polar monomers)  
 RN 24969-06-0 HCAPLUS  
 CN Oxirane, (chloromethyl)-, homopolymer (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 106-89-8  
 CMF C3 H5 Cl O



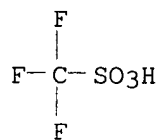
L28 ANSWER 21 OF 38 HCAPLUS COPYRIGHT 2001 ACS  
 AN 1995:721059 HCAPLUS  
 DN 123:84380  
 TI Copolymerization of tetrahydrofurans and cyclic anhydrides  
 IN Drysdale, Neville Everton  
 PA du Pont de Nemours, E. I., and Co., USA  
 SO PCT Int. Appl., 25 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 IC ICM C08G065-20  
 ICS C08G065-10; C08G063-82; C08G063-66  
 CC 35-7 (Chemistry of Synthetic High Polymers)  
 FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9419392	A1	19940901	WO 1993-US10140	19931029
	W: JP, KR, US				
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	EP 686167	A1	19951213	EP 1993-925001	19931029
	EP 686167	B1	19980708		
	R: DE, ES, NL				
	JP 08506851	T2	19960723	JP 1993-518935	19931029
	ES 2118265	T3	19980916	ES 1993-925001	19931029
	US 5990264	A	19991123	US 1996-690119	19960731
PRAI	US 1993-21369		19930223		
	WO 1993-US10140		19931029		
	US 1995-505293		19950822		
AB	Poly(ester-ethers) are produced by the copolymn. of THF and cyclic carboxylic anhydrides using selected metal perfluoroalkylsulfonates and				



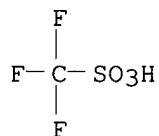
related compds. as catalysts, optionally with carboxylic acid activator. The resulting copolymers are useful as intermediates for monomers for use in other polymns. Polymn. of 2 g maleic anhydride and 20 mL THF in the presence of 1 g yttrium triflate  $Y(O_3SCF_3)_3$  catalyst gave copolymer having no.-av. mol. wt. 96,800, wt.-av. mol. wt. 188,000, and polydispersity 1.95.

- ST polyester **polyether** manuf **ring opening**  
catalyst; THF maleic anhydride copolymer manuf; yttrium triflate  
**ring opening** polymn catalyst; metal  
perfluoroalkylsulfonate polymn catalyst
- IT **Polyethers**, preparation  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(polyester-, manufd. in presence of select **ring opening** metal perfluoroalkylsulfonate catalyst)
- IT Polyesters, preparation  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(**polyether**-, manufd. in presence of select **ring opening** metal perfluoroalkylsulfonate catalyst)
- IT Polymerization catalysts  
(**ring-opening**, metal perfluoroalkylsulfonate;  
polTHF copolymn in presence of)
- IT 27532-13-4 **34622-08-7**, Neodymium triflate **52093-30-8**,  
Yttrium triflate 89672-77-5 **139177-62-1**; Dysprosium triflate  
**139177-64-3**, Erbium triflate **144026-79-9**, Scandium  
triflate  
RL: **CAT (Catalyst use)**; USES (Uses)  
(THF copolymn in presence of)
- IT 25657-73-2P 29564-74-7P, Succinic anhydride-tetrahydrofuran copolymer  
29564-75-8P 165890-28-8P 165890-29-9P 165890-30-2P 165890-31-3P  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(manufd. in presence of select metal perfluoroalkylsulfonate catalyst)
- IT 2923-28-6, Silver triflate  
RL: RCT (Reactant)  
(reaction with THF and pentamethylcyclopentadienyl zirconium  
dichloride)
- IT 54039-38-2, Bis(pentamethylcyclopentadienyl)zirconium dichloride  
RL: RCT (Reactant)  
(reaction with THF and silver triflate)
- IT 109-99-9, reactions  
RL: RCT (Reactant)  
(reaction with silver triflate and pentamethylcyclopentadienyl  
zirconium dichloride)
- IT **34622-08-7**, Neodymium triflate **52093-30-8**, Yttrium  
triflate **139177-62-1**, Dysprosium triflate **139177-64-3**,  
Erbium triflate **144026-79-9**, Scandium triflate  
RL: **CAT (Catalyst use)**; USES (Uses)  
(THF copolymn in presence of)
- RN 34622-08-7 HCAPLUS
- CN Methanesulfonic acid, trifluoro-, neodymium(3+) salt (9CI) (CA INDEX  
NAME)



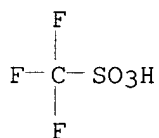
1/3 Nd(III)

RN 52093-30-8 HCAPLUS  
CN Methanesulfonic acid, trifluoro-, yttrium(3+) salt (9CI) (CA INDEX NAME)



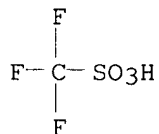
1/3 Y(III)

RN 139177-62-1 HCAPLUS  
CN Methanesulfonic acid, trifluoro-, dysprosium(3+) salt (9CI) (CA INDEX NAME)



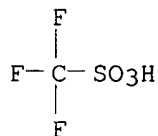
1/3 Dy(III)

RN 139177-64-3 HCAPLUS  
CN Methanesulfonic acid, trifluoro-, erbium(3+) salt (9CI) (CA INDEX NAME)



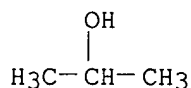
1/3 Er(III)

RN 144026-79-9 HCAPLUS  
CN Methanesulfonic acid, trifluoro-, scandium(3+) salt (9CI) (CA INDEX NAME)



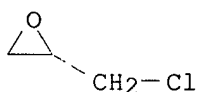
1/3 Sc(III)

L28 ANSWER 22 OF 38 HCAPLUS COPYRIGHT 2001 ACS  
 AN 1995:701594 HCAPLUS  
 DN 123:84196  
 TI The polymerization of epichlorohydrin with Nd(i-OPr)<sub>3</sub>-Al(i-Bu)<sub>3</sub> system  
 AU Liu, Jianfei; Sun, Junquan; Shen, Zhiquan  
 CS Dep. Polymer Sci. Eng., Zhejiang Univ., Hangzhou, 310027, Peop. Rep. China  
 SO Chin. J. Polym. Sci. (1994), 12(2), 153-6  
 CODEN: CJPSEG; ISSN: 0256-7679  
 DT Journal  
 LA English  
 CC 35-7 (Chemistry of Synthetic High **Polymers**)  
 AB Epichlorohydrin was polymd. with a rare earth catalytic system Nd(iso-OPr)<sub>3</sub>/Al(iso-Bu)<sub>3</sub>. The effects of Al/Nd molar ratio, solvents, polymn. time and temp., the aging time and temp. in the catalyst prepn. were studied. At low Al/Nd molar ratio (4) of the Nd(iso-OPr)<sub>3</sub>/Al(iso-Bu)<sub>3</sub> and low temp. (248K) the polymer was obtained with high conversion. The av. mol. wt. of poly(epichlorohydrin) ranged from 1 .times. 10<sup>5</sup> to 3 .times. 10<sup>5</sup>.  
 ST epichlorohydrin polymn neodymium aluminum catalyst; polyepichlorohydrin prepn neodymium aluminum catalyst  
 IT Polyoxyalkylenes, preparation  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (polymn. of epichlorohydrin with Nd(iso-OPr)<sub>3</sub>/Al(iso-Bu)<sub>3</sub> catalyst system)  
 IT Polymerization catalysts  
 (**ring-opening**, polymn. of epichlorohydrin with Nd(iso-OPr)<sub>3</sub>/Al(iso-Bu)<sub>3</sub> catalyst system)  
 IT 100-99-2, Triisobutylaluminum, uses **19236-15-8**, Neodymium triisopropoxide  
 RL: **CAT (Catalyst use)**; USES (Uses)  
 (polymn. of epichlorohydrin with Nd(iso-OPr)<sub>3</sub>/Al(iso-Bu)<sub>3</sub> catalyst system)  
 IT **24969-06-0P**, Polyepichlorohydrin 61710-61-0P, Polyepichlorohydrin SRU  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (polymn. of epichlorohydrin with Nd(iso-OPr)<sub>3</sub>/Al(iso-Bu)<sub>3</sub> catalyst system)  
 IT **19236-15-8**, Neodymium triisopropoxide  
 RL: **CAT (Catalyst use)**; USES (Uses)  
 (polymn. of epichlorohydrin with Nd(iso-OPr)<sub>3</sub>/Al(iso-Bu)<sub>3</sub> catalyst system)  
 RN 19236-15-8 HCAPLUS  
 CN 2-Propanol, neodymium(3+) salt (9CI) (CA INDEX NAME)



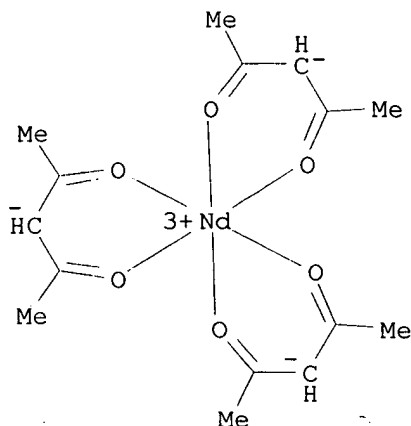
1/3 Nd(III)

IT **24969-06-0P**, Polyepichlorohydrin  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (polymn. of epichlorohydrin with Nd(iso-OPr)3/Al(iso-Bu)3 catalyst system)  
 RN 24969-06-0 HCAPLUS  
 CN Oxirane, (chloromethyl)-, homopolymer (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 106-89-8  
 CMF C3 H5 Cl O



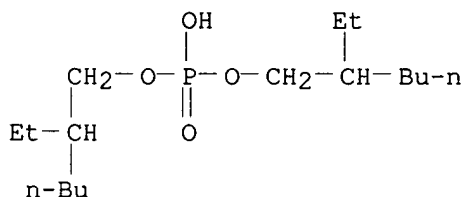
L28 ANSWER 23 OF 38 HCAPLUS COPYRIGHT 2001 ACS  
 AN 1995:27417 HCAPLUS  
 DN 122:161442  
 TI Synthesis and structural characterization of MAn-PO copolymer prepared by rare earth coordination catalyst  
 AU Chen, Xianhai; Zhang, Yifeng; Shen, Zhiquan  
 CS Dep. Chem., Zhejiang Univ., Hangzhou, 310027, Peop. Rep. China  
 SO Gaofenzi Xuebao (1994), (1), 70-5  
 CODEN: GAXUE9; ISSN: 1000-3304  
 DT Journal  
 LA Chinese  
 CC 35-3 (Chemistry of Synthetic High **Polymers**)  
 AB **Ring-opening** copolymn. of maleic anhydride (MAn) with propylene oxide (PO) was successfully carried out by using rare earth complexes (i.e., Nd(P204)3, Nd(P507)3, Nd(naph)3 and Nd(acac)3) in combination with alkylaluminum as catalysts for the first time. The relative concn. of triades of the MAn-PO copolymer obtained was investigated with 1H-NMR. The rare-earth coordination systems were favorable catalysts for the copolymn. of MAn with PO, giving high yield and almost alternating copolymer. The no.-av. mol. wt. and polydispersity were 2000-3000 and 1.3-1.7, resp. The compn. and the monomer distribution were affected by the monomer charge ratio, sorts of catalysts, and the property of solvents. The monomer compn. of the copolymer predicted from the third-order Markoffian process fit the obsd. 1H-NMR data perfectly.  
 ST **ring opening** polymn maleic anhydride oxypropylene; propylene oxide copolymer mol wt; rare earth complex catalyst polymn  
 IT Solvent effect  
 (solvent effects on synthesis and chain structure of **polyether** -polyesters prepd. by rare earth coordination catalysts)  
 IT Naphthenic acids, uses  
 RL: CAT (Catalyst use); USES (Uses)

- (neodymium salts, catalyst; synthesis and chain structure of **polyether**-polyesters prepd. by rare earth coordination catalysts)
- IT **Polyethers**, preparation  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (polyester-, synthesis and chain structure of **polyether**-polyesters prepd. by rare earth coordination catalysts)
- IT Polyesters, preparation  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (**polyether**-, synthesis and chain structure of **polyether**-polyesters prepd. by rare earth coordination catalysts)
- IT Polymerization  
 Polymerization catalysts  
 (ring-opening, synthesis and chain structure of **polyether**-polyesters prepd. by rare earth coordination catalysts)
- IT 14589-38-9 38326-04-4 79321-05-4  
 RL: CAT (Catalyst use); USES (Uses)  
 (contg. alkylaluminum; synthesis and chain structure of **polyether**-polyesters prepd. by rare earth coordination catalysts)
- IT 97-93-8, Triethylaluminum, uses 100-99-2, Tri(isobutyl)aluminum, uses 7440-00-8D, Neodymium, naphthenates  
 RL: CAT (Catalyst use); USES (Uses)  
 (rare earth complex catalysts contg. alkylaluminum; synthesis and chain structure of **polyether**-polyesters prepd. by rare earth coordination catalysts)
- IT 28156-21-0P, Maleic anhydride-propylene oxide copolymer  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (synthesis and chain structure of **polyether**-polyesters prepd. by rare earth coordination catalysts)
- IT 14589-38-9 38326-04-4 79321-05-4  
 RL: CAT (Catalyst use); USES (Uses)  
 (contg. alkylaluminum; synthesis and chain structure of **polyether**-polyesters prepd. by rare earth coordination catalysts)
- RN 14589-38-9 HCAPLUS
- CN Neodymium, tris(2,4-pentanedionato-.kappa.O,.kappa.O')-, (OC-6-11)- (9CI)  
 (CA INDEX NAME)



RN 38326-04-4 HCAPLUS

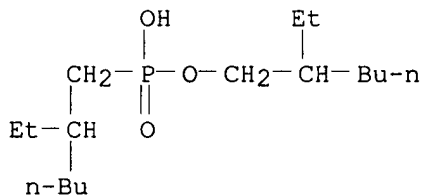
CN Phosphoric acid, bis(2-ethylhexyl) ester, neodymium(3+) salt (9CI) (CA INDEX NAME)



● 1/3 Nd(III)

RN 79321-05-4 HCAPLUS

CN Phosphonic acid, (2-ethylhexyl)-, mono(2-ethylhexyl) ester, neodymium(3+) salt (9CI) (CA INDEX NAME)



● 1/3 Nd(III)

IT 28156-21-0P, Maleic anhydride-propylene oxide copolymer

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(synthesis and chain structure of **polyether**-polyesters prepd.  
by rare earth coordination catalysts)

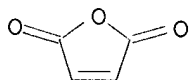
RN 28156-21-0 HCAPLUS

CN 2,5-Furandione, polymer with methyloxirane (9CI) (CA INDEX NAME)

CM 1

CRN 108-31-6

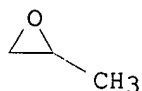
CMF C4 H2 O3



CM 2

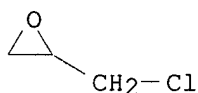
CRN 75-56-9

CMF C3 H6 O



- L28 ANSWER 24 OF 38 HCAPLUS COPYRIGHT 2001 ACS  
 AN 1995:19533 HCAPLUS  
 DN 122:32129  
 TI Rare earth trifluoroacetylacetonate complex catalysts for the **ring-opening** polymerization of epichlorohydrin  
 AU Hu, Meixian; Zhang, Yifeng; Wang, Xiaoling; Shen, Zhiquan  
 CS Dep. Chem., Zhejiang Univ., Hangzhou, Peop. Rep. China  
 SO Zhejiang Daxue Xuebao, Ziran Kexueban (1993), 27(2), 165-70  
 CODEN: ZDXKE5  
 DT Journal  
 LA Chinese  
 CC 35-3 (Chemistry of Synthetic High **Polymers**)  
 AB The tris(trifluoroacetylacetonato) rare earth element complexes were prepd. and evaluated as catalysts for **ring-opening** polymn. of epichlorohydrin. Triisobutylaluminum was used as cocatalyst. The kinetics of the polymn. were investigated.  
 ST rare earth trifluoroacetylacetonate polymn catalyst; epichlorohydrin polymn catalyst kinetics  
 IT Polyoxyalkylenes, preparation  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (prepn. by **ring-opening** polymn. of epichlorohydrin  
 in presence of rare earth trifluoroacetylacetonate complex catalysts)  
 IT Kinetics of polymerization  
 (**ring-opening**, of epichlorohydrin in presence of  
 rare earth trifluoroacetylacetonate complex catalysts)  
 IT Polymerization catalysts  
 (**ring-opening**, rare earth trifluoroacetylacetonate  
 complexes for epichlorohydrin)  
 IT 100-99-2, Triisobutylaluminum, uses  
 RL: CAT (Catalyst use); USES (Uses)  
 (cocatalyst; rare earth trifluoroacetylacetonate complex catalysts for  
 the **ring-opening** polymn. of epichlorohydrin)  
 IT 106-89-8, Epichlorohydrin, reactions  
 RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC  
 (Process)  
 (kinetics of **ring-opening** polymn. of  
 epichlorohydrin in presence of rare earth trifluoroacetylacetonate  
 complex catalysts)  
 IT 24969-06-0P, Polyepichlorohydrin 61710-61-0P,  
 Polyepichlorohydrin sru  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (prepn. by **ring-opening** polymn. of epichlorohydrin  
 in presence of rare earth trifluoroacetylacetonate complex catalysts)  
 IT 14526-21-7P, Europium tris(trifluoroacetylacetonate)  
 14526-25-1P, Terbium tris(trifluoroacetylacetonate)  
 14640-68-7P, Lanthanum tris(trifluoroacetylacetonate)  
 18923-96-1P, Yttrium tris(trifluoroacetylacetonate)  
 21654-48-8P, Dysprosium tris(trifluoroacetylacetonate)  
 22017-02-3P, Holmium tris(trifluoroacetylacetonate)  
 23301-82-8P, Samarium tris(trifluoroacetylacetonate)  
 59991-56-9P, Praseodymium tris(trifluoroacetylacetonate)  
 67118-77-8P, Erbium tris(trifluoroacetylacetonate)  
 97011-37-5P, Thulium tris(trifluoroacetylacetonate)  
 97042-23-4P, Ytterbium tris(trifluoroacetylacetonate)

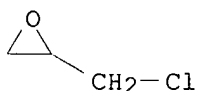
RL: **CAT (Catalyst use)**; SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (rare earth trifluoroacetylacetonate complex catalysts for the **ring-opening** polymn. of epichlorohydrin)  
 IT 106-89-8, Epichlorohydrin, reactions  
 RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process)  
 (kinetics of **ring-opening** polymn. of epichlorohydrin in presence of rare earth trifluoroacetylacetonate complex catalysts)  
 RN 106-89-8 HCAPLUS  
 CN Oxirane, (chloromethyl)- (9CI) (CA INDEX NAME)



IT 24969-06-0P, Polyepichlorohydrin  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (prepn. by **ring-opening** polymn. of epichlorohydrin in presence of rare earth trifluoroacetylacetonate complex catalysts)  
 RN 24969-06-0 HCAPLUS  
 CN Oxirane, (chloromethyl)-, homopolymer (9CI) (CA INDEX NAME)

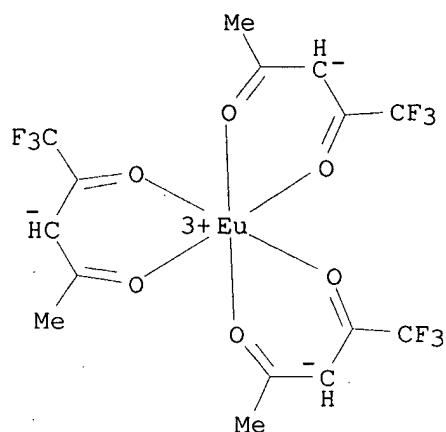
CM 1

CRN 106-89-8  
 CMF C3 H5 Cl O



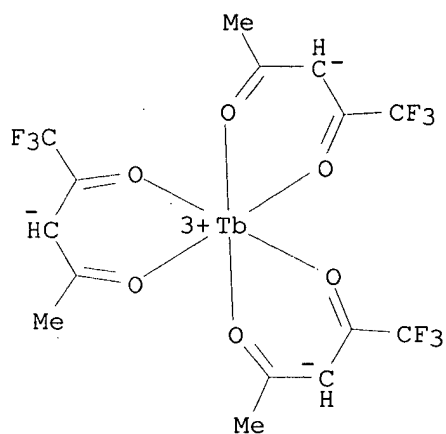
IT 14526-21-7P, Europium tris(trifluoroacetylacetonate)  
 14526-25-1P, Terbium tris(trifluoroacetylacetonate)  
 14640-68-7P, Lanthanum tris(trifluoroacetylacetonate)  
 18923-96-1P, Yttrium tris(trifluoroacetylacetonate)  
 21654-48-8P, Dysprosium tris(trifluoroacetylacetonate)  
 22017-02-3P, Holmium tris(trifluoroacetylacetonate)  
 23301-82-8P, Samarium tris(trifluoroacetylacetonate)  
 59991-56-9P, Praseodymium tris(trifluoroacetylacetonate)  
 67118-77-8P, Erbium tris(trifluoroacetylacetonate)  
 97011-37-5P, Thulium tris(trifluoroacetylacetonate)  
 97042-23-4P, Ytterbium tris(trifluoroacetylacetonate)  
 RL: **CAT (Catalyst use)**; SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (rare earth trifluoroacetylacetonate complex catalysts for the **ring-opening** polymn. of epichlorohydrin)  
 RN 14526-21-7 HCAPLUS  
 CN Europium, tris(1,1,1-trifluoro-2,4-pentanedionato-.kappa.O,.kappa.O')- (9CI) (CA INDEX NAME)





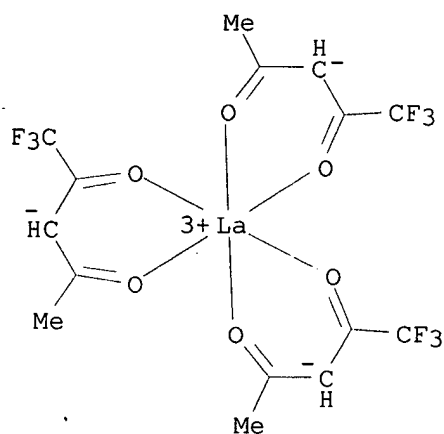
RN 14526-25-1 HCAPLUS

CN Terbium, tris(1,1,1-trifluoro-2,4-pentanedionato-.kappa.O,.kappa.O')-  
(9CI) (CA INDEX NAME)



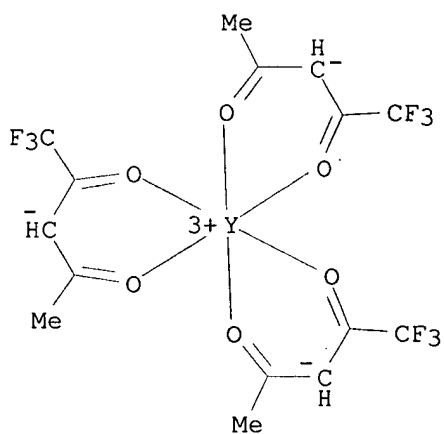
RN 14640-68-7 HCAPLUS

CN Lanthanum, tris(1,1,1-trifluoro-2,4-pentanedionato-.kappa.O,.kappa.O')-  
(9CI) (CA INDEX NAME)



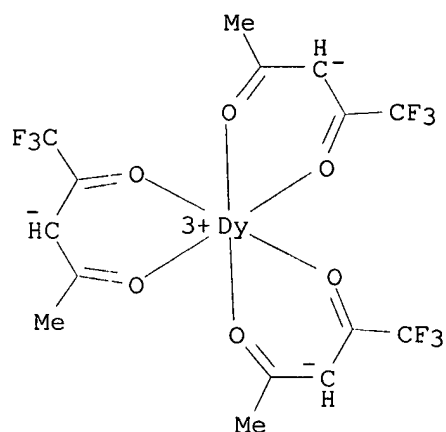
RN 18923-96-1 HCAPLUS

CN Yttrium, tris(1,1,1-trifluoro-2,4-pentanedionato-.kappa.O,.kappa.O')-  
(9CI) (CA INDEX NAME)



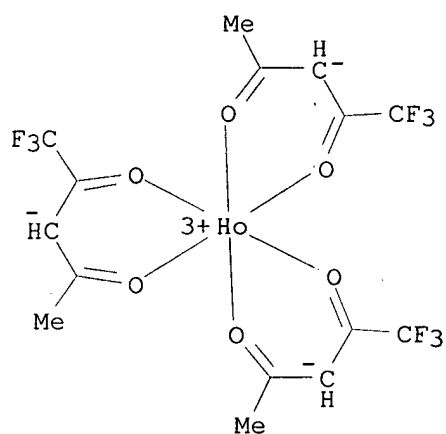
RN 21654-48-8 HCAPLUS

CN Dysprosium, tris(1,1,1-trifluoro-2,4-pentanedionato-O,O')- (9CI) (CA  
INDEX NAME)



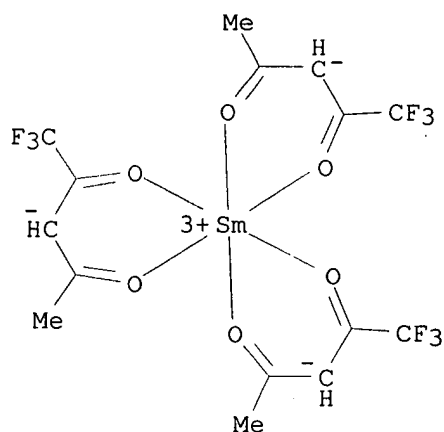
RN 22017-02-3 HCAPLUS

CN Holmium, tris(1,1,1-trifluoro-2,4-pentanedionato-O,O')- (9CI) (CA INDEX NAME)



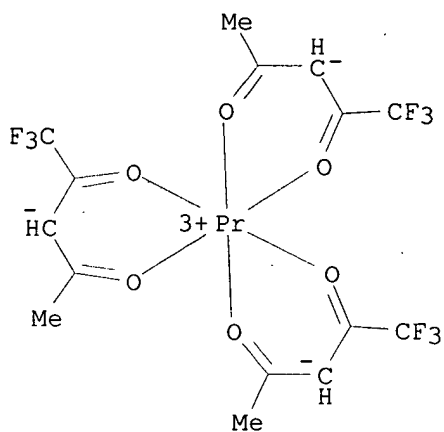
RN 23301-82-8 HCAPLUS

CN Samarium, tris(1,1,1-trifluoro-2,4-pentanedionato-.kappa.O,.kappa.O')- (9CI) (CA INDEX NAME)



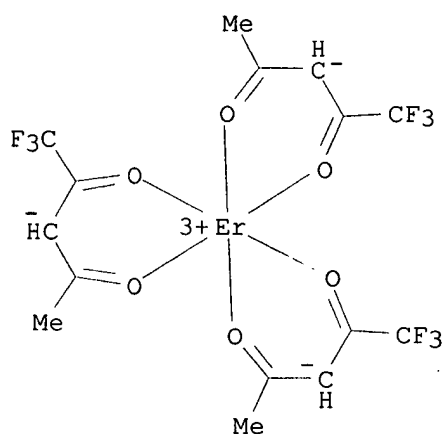
RN 59991-56-9 HCAPLUS

CN Praseodymium, tris(1,1,1-trifluoro-2,4-pentanedionato-.kappa.O,.kappa.O')- (9CI) (CA INDEX NAME)



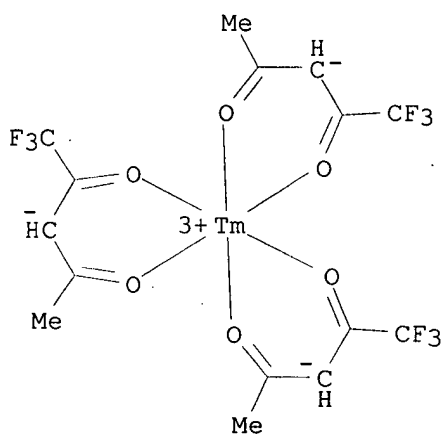
RN 67118-77-8 HCAPLUS

CN Erbium, tris(1,1,1-trifluoro-2,4-pentanedionato-O,O')- (9CI) (CA INDEX NAME)



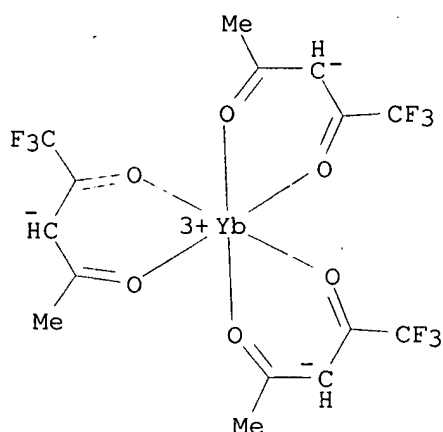
RN 97011-37-5 HCAPLUS

CN Thulium, tris(1,1,1-trifluoro-2,4-pentanedionato-.kappa.O,.kappa.O')-(9CI) (CA INDEX NAME)



RN 97042-23-4 HCAPLUS

CN Ytterbium, tris(1,1,1-trifluoro-2,4-pentanedionato-.kappa.O,.kappa.O')-(9CI) (CA INDEX NAME)



L28 ANSWER 25 OF 38 HCAPLUS COPYRIGHT 2001 ACS

AN 1994:218670 HCAPLUS

DN 120:218670

TI **Ring-opening** alternating copolymerization of maleic anhydride and propylene oxide by Nd(P507)3-Al(i-Bu)3

AU Fang, Jianghua; Huang, Shili; Shen, Zhiquan

CS Dep. Chem., Ningbo Coll. Ningbo, Ningbo, 315020, Peop. Rep. China

SO Fenzi Cuihua (1994), 8(1), 70-5

CODEN: FECUEN; ISSN: 1001-3555

DT Journal

LA Chinese

CC 35-3 (Chemistry of Synthetic High **Polymers**)

AB The characteristics and product structure of alternating copolymn. of propylene oxide (I) with maleic anhydride (II) catalyzed by Nd(P507)3-Al(iso-Bu)3 are presented and discussed. The structure of the copolymer is studied with IR and NMR. There is >44% II in the copolymer by calcg. the ratio of peak area of 1H-NMR from the copolymer obtained from different monomer ratio. The copolymn. can be realized in the solvents such as arom. hydrocarbon and alkane. The yield and [eta.] are higher in arom. hydrocarbon than in other solvents. In benzene, the yield is 68.4%, [eta.] = 8.6 .times. 10<sup>-2</sup> dL/g. The way of adding the raw materials to the reaction system influences the yield. The better order is II .fwdarw. solvent .fwdarw. I .fwdarw. catalyst. The more suitable concn. of catalysts is [Nd] = 1.0 .times. 10<sup>-2</sup> mol/L, [Al]/[Nd] = 6-8. The higher is the temp. of copolymn., the higher are the yield and [eta.]. The more suitable temp. is 60-70.degree..

ST propylene oxide polymn catalyst; maleic anhydride polymn catalyst; **ring opening** alternating polymn catalyst; neodymium polymn catalyst **ring opening**; aluminum polymn catalyst **ring opening**

IT Solvent effect

(on alternating **ring-opening** polymn. of maleic anhydride with propylene oxide in presence of aluminum-neodymium catalysts)

IT Polymerization catalysts

(alternating, **ring-opening**, aluminum-neodymium, for maleic anhydride with propylene oxide)

IT 100-99-2, Triisobutylaluminum, uses

RL: CAT (Catalyst use); USES (Uses)

(catalysts, contg. neodymium, for **ring-opening** alternating copolymn. of maleic anhydride with propylene oxide)

IT 79321-05-4

RL: CAT (Catalyst use); USES (Uses)

(catalysts, contg. triisobutylaluminum, for ring-opening alternating copolymn. of maleic anhydride with propylene oxide)

IT 9016-84-6P 28156-21-0P

RL: SPN (Synthetic preparation); PREP (Preparation)

(prepn. of, catalysts for, aluminum-neodymium as)

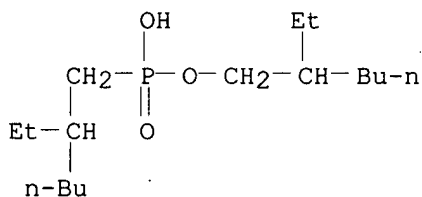
IT 79321-05-4

RL: CAT (Catalyst use); USES (Uses)

(catalysts, contg. triisobutylaluminum, for ring-opening alternating copolymn. of maleic anhydride with propylene oxide)

RN 79321-05-4 HCAPLUS

CN Phosphonic acid, (2-ethylhexyl)-, mono(2-ethylhexyl) ester, neodymium(3+) salt (9CI) (CA INDEX NAME)



● 1/3 Nd(III)

IT 28156-21-0P

RL: SPN (Synthetic preparation); PREP (Preparation)

(prepn. of, catalysts for, aluminum-neodymium as)

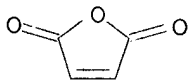
RN 28156-21-0 HCAPLUS

CN 2,5-Furandione, polymer with methyloxirane (9CI) (CA INDEX NAME)

CM 1

CRN 108-31-6

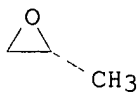
CMF C4 H2 O3



CM 2

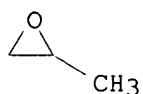
CRN 75-56-9

CMF C3 H6 O



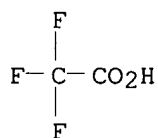
L28 ANSWER 26 OF 38 HCAPLUS COPYRIGHT 2001 ACS  
AN 1994:31318 HCAPLUS  
DN 120:31318  
TI **Ring-opening** polymerization of tetrahydrofuran with  
rare earth-contained catalysts  
AU Li, Fengfu; Jin, Yingtai; Pei, Fengkui; Wang, Fosong  
CS Changchun Inst. Appl. Chem., Acad. Sin., Changchun, Peop. Rep. China  
SO J. Appl. Polym. Sci. (1993), 50(11), 2017-20  
CODEN: JAPNAB; ISSN: 0021-8995  
DT Journal  
LA English  
CC 35-3 (Chemistry of Synthetic High **Polymers**)  
AB Rare earth trifluoroacetates, Ln(CF<sub>3</sub>CO<sub>2</sub>)<sub>3</sub> (Ln = 13 rare earth elements),  
combined with RnAlH<sub>3</sub>-n (R = Me, octyl, n = 3; R = Et, iso-Bu, n = 2, 3)  
were used as catalysts for the polymn. of THF. The activity increased by  
adding propylene oxide (I), as a promoter, to the polymn. system,  
producing high mol. wt. polytetrahydrofuran (PTHF). The effects of Ln,  
I/Ln ratio, Al/Ln ratio, and other factors on the polymn. of THF were also  
studied.  
ST THF polymn catalyst rare earth; **ring opening** polymn  
THF  
IT Polymerization catalysts  
(**ring-opening**, rare earth trifluoroacetate-based,  
for THF)  
IT 75-56-9, Propylene oxide, uses 2263-49-2, Samarium  
tris(trifluoroacetate) 29770-44-3, Neodymium  
tris(trifluoroacetate) 37737-28-3 58097-52-2, Terbium  
tris(trifluoroacetate) 70236-92-9 70236-93-0  
70236-94-1 70236-95-2, Europium tris(trifluoroacetate)  
70236-96-3 70236-97-4, Dysprosium tris(trifluoroacetate)  
70236-98-5, Holmium tris(trifluoroacetate) 70236-99-6,  
Erbium tris(trifluoroacetate) 70237-00-2, Thulium  
tris(trifluoroacetate)  
RL: **CAT (Catalyst use)**; USES (Uses)  
(catalysts contg., for polymn. of THF)  
IT 75-24-1, Trimethylaluminum 97-93-8, Triethylaluminum, uses 100-99-2,  
Triisobutylaluminum, uses 871-27-2, Diethylaluminum hydride 1070-00-4,  
Trioctylaluminum 1191-15-7, Diisobutylaluminum hydride  
RL: **CAT (Catalyst use)**; USES (Uses)  
(catalysts, contg. rare earth trifluoroacetates, for polymn. of THF)  
IT 24979-97-3P, Poly(tetrahydrofuran)  
RL: **SPN (Synthetic preparation)**; **PREP (Preparation)**  
(prepn. of, rare earth trifluoroacetate-based catalysts for)  
IT 75-56-9, Propylene oxide, uses 2263-49-2, Samarium  
tris(trifluoroacetate) 29770-44-3, Neodymium  
tris(trifluoroacetate) 37737-28-3 58097-52-2, Terbium  
tris(trifluoroacetate) 70236-92-9 70236-93-0  
70236-94-1 70236-95-2, Europium tris(trifluoroacetate)  
70236-96-3 70236-97-4, Dysprosium tris(trifluoroacetate)  
70236-98-5, Holmium tris(trifluoroacetate) 70236-99-6,  
Erbium tris(trifluoroacetate) 70237-00-2, Thulium  
tris(trifluoroacetate)  
RL: **CAT (Catalyst use)**; USES (Uses)  
(catalysts contg., for polymn. of THF)  
RN 75-56-9 HCAPLUS  
CN Oxirane, methyl- (9CI) (CA INDEX NAME)





RN 2263-49-2 HCAPLUS

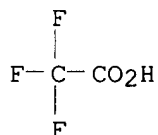
CN Acetic acid, trifluoro-, samarium(3+) salt (9CI) (CA INDEX NAME)



1/3 Sm(III)

RN 29770-44-3 HCAPLUS

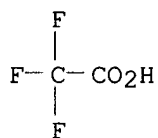
CN Acetic acid, trifluoro-, neodymium(3+) salt (8CI, 9CI) (CA INDEX NAME)



1/3 Nd(III)

RN 37737-28-3 HCAPLUS

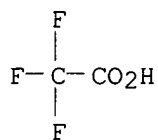
CN Acetic acid, trifluoro-, yttrium(3+) salt (9CI) (CA INDEX NAME)



1/3 Y(III)

RN 58097-52-2 HCAPLUS

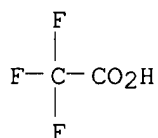
CN Acetic acid, trifluoro-, terbium(3+) salt (9CI) (CA INDEX NAME)



1/3 Tb(III)

RN 70236-92-9 HCAPLUS

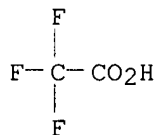
CN Acetic acid, trifluoro-, lanthanum(3+) salt (9CI) (CA INDEX NAME)



1/3 La(III)

RN 70236-93-0 HCAPLUS

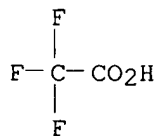
CN Acetic acid, trifluoro-, cerium(3+) salt (9CI) (CA INDEX NAME)



1/3 Ce(III)

RN 70236-94-1 HCAPLUS

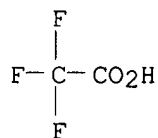
CN Acetic acid, trifluoro-, praseodymium(3+) salt (9CI) (CA INDEX NAME)



1/3 Pr(III)

RN 70236-95-2 HCAPLUS

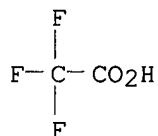
CN Acetic acid, trifluoro-, europium(3+) salt (9CI) (CA INDEX NAME)



1/3 Eu(III)

RN 70236-96-3 HCAPLUS

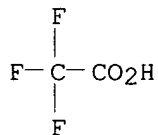
CN Acetic acid, trifluoro-, gadolinium(3+) salt (9CI) (CA INDEX NAME)



1/3 Gd(III)

RN 70236-97-4 HCAPLUS

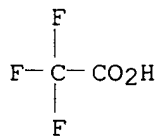
CN Acetic acid, trifluoro-, dysprosium(3+) salt (9CI) (CA INDEX NAME)



1/3 Dy(III)

RN 70236-98-5 HCAPLUS

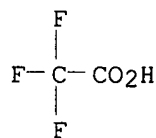
CN Acetic acid, trifluoro-, holmium(3+) salt (9CI) (CA INDEX NAME)



1/3 Ho(III)

RN 70236-99-6 HCAPLUS

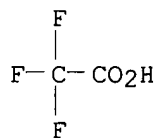
CN Acetic acid, trifluoro-, erbium(3+) salt (9CI) (CA INDEX NAME)



1/3 Er(III)

RN 70237-00-2 HCAPLUS

CN Acetic acid, trifluoro-, thulium(3+) salt (9CI) (CA INDEX NAME)



●1/3 Tm(III)

L28 ANSWER 27 OF 38 HCAPLUS COPYRIGHT 2001 ACS

AN 1993:102546 HCAPLUS

DN 118:102546

TI Synthesis of functional unsaturated polyesters using rare earth coordination catalysts. 3. Mechanistic aspects of maleic anhydride-epichlorohydrin copolymerization with  $\text{Nd}[(\text{RO})_2\text{PO}_2]_3/\text{Al}[\text{CH}_2\text{CH}(\text{CH}_3)_2]_3$  as a catalyst

AU Chen, Xianhai; Zhang, Yifeng; Shen, Zhiquan

CS Dep. Chem., Zhejiang Univ., Hangzhou, 310027, Peop. Rep. China

SO Makromol. Chem. (1992), 193(12), 2989-95

CODEN: MACEAK; ISSN: 0025-116X

DT Journal

LA English

CC 35-3 (Chemistry of Synthetic High Polymers)

AB **Ring-opening** alternating copolymn. of maleic anhydride with epichlorohydrin was carried out at 70.degree. with rare earth coordination catalysts composed of  $\text{Nd}[(\text{RO})_2\text{PO}_2]_3$  ( $\text{R} = \text{BuCH}_2\text{CH}_2$ ) and trialkylaluminum. Anal. of end groups showed that the copolymer chain contained 1 OH and 1  $\text{CH}:\text{CHCOBu}$ -iso end group. IR, UV-visible, and  $^1\text{H}$  NMR spectroscopy and gel-permeation chromatog. results implied that a catalyst-maleic anhydride complex was formed in the initiation step and that the **ring-opening** copolymn. proceeded via coordinate insertion mechanism accompanied by chain transfer.

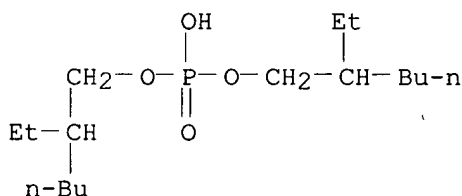
ST **ring opening** alternating polymn catalyst; maleic anhydride epichlorohydrin alternating polymn; neodymium aluminum catalyst polymn

IT Chain transfer  
(in alternating **ring-opening** polymn. of epichlorohydrin with maleic anhydride)

IT Polymerization catalysts  
(alternating, **ring-opening**, neodymium-aluminum, for epichlorohydrin with maleic anhydride)

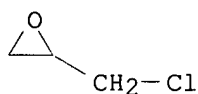
KATHLEEN FULLER EIC 1700/LAW LIBRARY 308-4290

- IT Polymerization  
(alternating, **ring-opening**, of epichlorohydrin with maleic anhydride, unsatd. polyesters from)
- IT Polyesters, preparation  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(unsatd., chlorine-contg., prepn. of, by alternating **ring-opening** polymn. in presence of neodymium-aluminum catalysts)
- IT 97-93-8, Triethylaluminum, uses 100-99-2, Triisobutylaluminum, uses  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. neodymium, for alternating, **ring-opening** polymn. of epichlorohydrin with maleic anhydride)
- IT 38326-04-4  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. triisobutylaluminum, for alternating, **ring-opening** polymn. of epichlorohydrin with maleic anhydride)
- IT 108-31-6, Maleic anhydride, reactions  
RL: RCT (Reactant)  
(polymn. of, alternating, with epichlorohydrin, in presence of neodymium-aluminum catalysts)
- IT 106-89-8, Epichlorohydrin, reactions  
RL: RCT (Reactant)  
(polymn. of, alternating, with maleic anhydride, in presence of neodymium-aluminum catalysts)
- IT 145267-18-1P 146116-27-0P, Epichlorohydrin-maleic anhydride alternating copolymer  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. of, in presence of neodymium-aluminum catalysts)
- IT 38326-04-4  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. triisobutylaluminum, for alternating, **ring-opening** polymn. of epichlorohydrin with maleic anhydride)
- RN 38326-04-4 HCAPLUS
- CN Phosphoric acid, bis(2-ethylhexyl) ester, neodymium(3+) salt (9CI) (CA INDEX NAME)

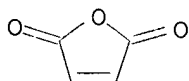


● 1/3 Nd(III)

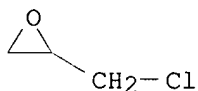
- IT 106-89-8, Epichlorohydrin, reactions  
RL: RCT (Reactant)  
(polymn. of, alternating, with maleic anhydride, in presence of neodymium-aluminum catalysts)
- RN 106-89-8 HCAPLUS
- CN Oxirane, (chloromethyl)- (9CI) (CA INDEX NAME)



IT 146116-27-0P, Epichlorohydrin-maleic anhydride alternating copolymer  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (prepn. of, in presence of neodymium-aluminum catalysts)  
 RN 146116-27-0 HCAPLUS  
 CN 2,5-Furandione, polymer with (chloromethyl)oxirane, alternating (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 108-31-6  
 CMF C4 H2 O3

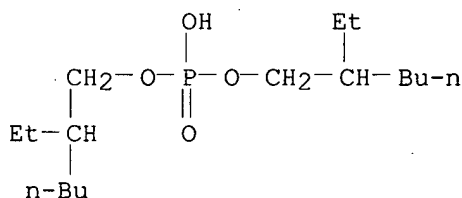


CM 2  
 CRN 106-89-8  
 CMF C3 H5 Cl O



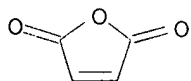
L28 ANSWER 28 OF 38 HCAPLUS COPYRIGHT 2001 ACS  
 AN 1992:592810 HCAPLUS  
 DN 117:192810  
 TI Synthesis of functional unsaturated polyester by using rare earth catalysts. I. Copolymerization of epichlorohydrin with maleic anhydride in the presence of yttrium phosphonate-triisobutylaluminum [Y(P5O7)3-Al(i-Bu)3]  
 AU Shen, Zhiqun; Chen, Xianhai; Zhang, Yifeng; Chen, Baoqian  
 CS Dep. Chem., Zhejiang Univ., Hangzhou, 310027, Peop. Rep. China  
 SO Polym. Bull. (Berlin) (1992), 29(1-2), 57-62  
 CODEN: POBUDR; ISSN: 0170-0839  
 DT Journal  
 LA English  
 CC 37-3 (Plastics Manufacture and Processing)  
 Section cross-reference(s): 35  
 AB **Ring-opening** copolymn. of epichlorohydrin (I) with maleic anhydride (II) was catalyzed by Y phosphonate in combination with iso-Bu3Al for the 1st time to give almost alternating functional copolyester. The yield and compn. of the copolymer were affected by the reaction conditions, esp. the initial monomer charge ratio. The overall activation energy of the copolymn. was 19.0 kcal/mol. Evidence for the structure of I-II copolymer was obtained by IR and 1H-NMR.

- ST alternating epichlorohydrin maleic anhydride polyester; yttrium phosphonate polymn catalyst polyester
- IT Polymerization  
(of epichlorohydrin with maleic anhydride, activation energy of)
- IT Polyesters, preparation  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. of, rare earth catalysts for)
- IT Polymerization catalysts  
(triisobutylaluminum-yttrium phosphonate, for epichlorohydrin with maleic anhydride)
- IT **38326-06-6**  
RL: **CAT (Catalyst use)**; USES (Uses)  
(catalysts, contg. triisobutylaluminum, for polymn. of epichlorohydrin with maleic anhydride)
- IT 100-99-2, Triisobutylaluminum, uses  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. yttrium phosphonate, for polymn. of epichlorohydrin with maleic anhydride)
- IT **30664-18-7P**, Epichlorohydrin-maleic anhydride copolymer  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. of, rare earth catalysts for)
- IT **38326-06-6**  
RL: **CAT (Catalyst use)**; USES (Uses)  
(catalysts, contg. triisobutylaluminum, for polymn. of epichlorohydrin with maleic anhydride)
- RN 38326-06-6 HCAPLUS
- CN Phosphoric acid, bis(2-ethylhexyl) ester, yttrium(3+) salt (9CI) (CA INDEX NAME)



● 1/3 Y(III)

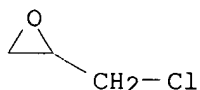
- IT **30664-18-7P**, Epichlorohydrin-maleic anhydride copolymer  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. of, rare earth catalysts for)
- RN 30664-18-7 HCAPLUS
- CN 2,5-Furandione, polymer with (chloromethyl)oxirane (9CI) (CA INDEX NAME)
- CM 1
- CRN 108-31-6
- CMF C4 H2 O3



CM 2

CRN 106-89-8

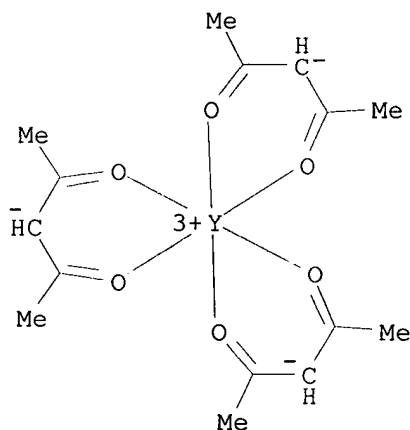
CMF C3 H5 Cl O



- L28 ANSWER 29 OF 38 HCAPLUS COPYRIGHT 2001 ACS  
 AN 1992:490883 HCAPLUS  
 DN 117:90883  
 TI Polymerization of epichlorohydrin by yttrium acetylacetonate  
 AU Zhang, Yifeng; Shen, Zhiquan; Zheng, Ronghua; Chen, Xianhai  
 CS Dep. Chem., Zhejiang Univ., Hangzhou, 310027, Peop. Rep. China  
 SO Yingyong Huaxue (1992), 9(3), 76-8  
 CODEN: YIHUED  
 DT Journal  
 LA Chinese  
 CC 35-3 (Chemistry of Synthetic High Polymers)  
 AB Y tris(acetylacetonate)-water-Al(iso-Bu)<sub>3</sub> system was used as a catalyst for polymn. of epichlorohydrin (I). When the molar ratio of water/Al = 0.5 and Al/Y = 8-12, the conversion rate of I increased while the mol. wt. of polyepichlorohydrin (II) decreased with increasing Al-Y molar ratio. The mol.-wt. distribution of II detd. by gel chromatog. showed that the no. of active species was dependent on the method of catalyst prepn. The activity of the above catalyst system for copolymn. of I with **ethylene oxide** (III) and propylene oxide (IV) was low and could be increased by increasing Al-Y molar ratio. The relative reactivity of the monomers decreased in the order of III > IV > I.  
 ST yttrium acetylacetonate polymn catalyst epichlorohydrin; water polymn catalyst epichlorohydrin; aluminum triisobutyl polymn catalyst epichlorohydrin; polyepichlorohydrin mol wt prepn catalyst; **ethylene oxide** copolymn epichlorohydrin; propylene oxide copolymn epichlorohydrin  
 IT Reactivity ratio in polymerization  
 (of epichlorohydrin with **ethylene oxide** or propylene oxide, in presence of yttrium tris(acetylacetonate)-water-triisobutylaluminum catalyst)  
 IT Polyoxyalkylenes, preparation  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (prepn. of, catalysts for, yttrium tris(acetylacetonate)-water-triisobutylaluminum as)  
 IT Polymerization catalysts  
 (**ring-opening**, triisobutylaluminum-yttrium tris(acetylacetonate)-water, for epichlorohydrin)  
 IT 15554-47-9, Yttrium tris(acetylacetonate)  
 RL: CAT (Catalyst use); USES (Uses)  
 (catalysts, contg. water and triisobutylaluminum, for homo- and copolymn. of epichlorohydrin)  
 IT 100-99-2, Triisobutylaluminum, uses  
 RL: CAT (Catalyst use); USES (Uses)  
 (catalysts, contg. water and yttrium tris(acetylacetonate), for homo- and copolymn. of epichlorohydrin)  
 IT 7732-18-5, Water, uses



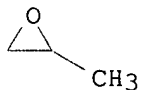
- RL: CAT (Catalyst use); USES (Uses)  
 (catalysts, contg. yttrium tris(acetylacetonate) and triisobutylaluminum, for homo- and copolymn. of epichlorohydrin)
- IT 75-21-8, **Ethylene oxide**, reactions  
 75-56-9, Propylene oxide, reactions  
 RL: RCT (Reactant)  
 (polymn. of, with epichlorohydrin, in presence of yttrium tris(acetylacetonate)-water-triisobutylaluminum catalyst, reactivity ratio in)
- IT 106-89-8, Epichlorohydrin, reactions  
 RL: RCT (Reactant)  
 (polymn. of, with **ethylene oxide** or propylene oxide, in presence of yttrium tris(acetylacetonate)-water-triisobutylaluminum catalyst, reactivity ratio in)
- IT 24969-06-0P, Epichlorohydrin homopolymer 24969-08-2P, Epichlorohydrin-propylene oxide copolymer 24969-10-6P, Epichlorohydrin-**ethylene oxide** copolymer 61710-61-0P, Epichlorohydrin homopolymer, SRU  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (prepn. of, catalysts for, yttrium tris(acetylacetonate)-water-triisobutylaluminum as)
- IT 15554-47-9, Yttrium tris(acetylacetonate)  
 RL: CAT (Catalyst use); USES (Uses)  
 (catalysts, contg. water and triisobutylaluminum, for homo- and copolymn. of epichlorohydrin)
- RN 15554-47-9 HCAPLUS  
 CN Yttrium, tris(2,4-pentanedionato-.kappa.O,.kappa.O')-, (OC-6-11)- (9CI)  
 (CA INDEX NAME)



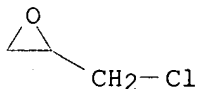
- IT 75-21-8, **Ethylene oxide**, reactions  
 75-56-9, Propylene oxide, reactions  
 RL: RCT (Reactant)  
 (polymn. of, with epichlorohydrin, in presence of yttrium tris(acetylacetonate)-water-triisobutylaluminum catalyst, reactivity ratio in)
- RN 75-21-8 HCAPLUS  
 CN Oxirane (9CI) (CA INDEX NAME)



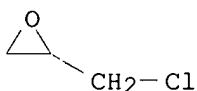
RN 75-56-9 HCAPLUS  
CN Oxirane, methyl- (9CI) (CA INDEX NAME)



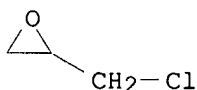
IT 106-89-8, Epichlorohydrin, reactions  
RL: RCT (Reactant)  
(polymn. of, with **ethylene oxide** or propylene  
oxide, in presence of yttrium tris(acetylacetonate)-water-  
triisobutylaluminum catalyst, reactivity ratio in)  
RN 106-89-8 HCAPLUS  
CN Oxirane, (chloromethyl)- (9CI) (CA INDEX NAME)



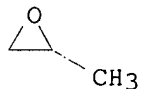
IT 24969-06-0P, Epichlorohydrin homopolymer 24969-08-2P,  
Epichlorohydrin-propylene oxide copolymer 24969-10-6P,  
Epichlorohydrin-**ethylene oxide** copolymer  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. of, catalysts for, yttrium tris(acetylacetonate)-water-  
triisobutylaluminum as)  
RN 24969-06-0 HCAPLUS  
CN Oxirane, (chloromethyl)-, homopolymer (9CI) (CA INDEX NAME)  
  
CM 1  
  
CRN 106-89-8  
CMF C3 H5 Cl O



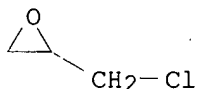
RN 24969-08-2 HCAPLUS  
CN Oxirane, (chloromethyl)-, polymer with methyloxirane (9CI) (CA INDEX  
NAME)  
  
CM 1  
  
CRN 106-89-8  
CMF C3 H5 Cl O



CM 2

CRN 75-56-9  
CMF C3 H6 ORN 24969-10-6 HCAPLUS  
CN Oxirane, (chloromethyl)-, polymer with oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 106-89-8  
CMF C3 H5 Cl O

CM 2

CRN 75-21-8  
CMF C2 H4 O

L28 ANSWER 30 OF 38 HCAPLUS COPYRIGHT 2001 ACS  
 AN 1992:449427 HCAPLUS  
 DN 117:49427  
 TI Polymerization catalysts for **alkylene oxides**  
 IN Jenkins, Derek Keith  
 PA Enichem Elastomers Ltd., UK  
 SO Brit. UK Pat. Appl., 6 pp.  
 CODEN: BAXXDU

DT Patent  
 LA English  
 IC ICM C08G065-10  
 ICS B01J031-00

CC 35-3 (Chemistry of Synthetic High **Polymers**)  
 Section cross-reference(s): 67

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	GB 2247024	A1	19920219	GB 1991-17493	19910813
	GB 2247024	B2	19931027		
PRAI	GB 1990-17875		19900815		

AB **Alkylene oxides** are polyimd. by aluminoxanes, rare earth salts or complexes in hydrocarbon solvents or diluents. Thus, polyimg. C3H6O by 5 mM (based on 100 g C3H6O) Nd neodecanoate and 30 mol

(based on 1 mol Nd) Bu aluminoxanes in PhMe at 60.degree. for 24 h gave 68.7% polymers with intrinsic viscosity (in PhMe, 30.degree.) 1.81.

ST propylene oxide polymn aluminoxane catalyst; **alkylene oxide** polymn catalyst; **ring opening** polymn catalyst

IT Aluminoxanes  
RL: CAT (Catalyst use); USES (Uses)  
(polymn. catalysts, for **alkylene oxides**)

IT Polymerization catalysts  
(**ring-opening**, rare earth salts and aluminoxanes, for **alkylene oxide**)

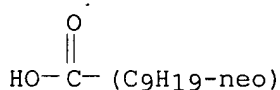
IT 106726-11-8  
RL: CAT (Catalyst use); USES (Uses)  
(polymn. catalysts, for **alkylene oxides**)

IT 25322-69-4P, Propylene oxide homopolymer  
RL: PREP (Preparation)  
(prepn. of, polymn. catalysts for)

IT 106726-11-8  
RL: CAT (Catalyst use); USES (Uses)  
(polymn. catalysts, for **alkylene oxides**)

RN 106726-11-8 HCAPLUS

CN Neodecanoic acid, neodymium(3+) salt (9CI) (CA INDEX NAME)

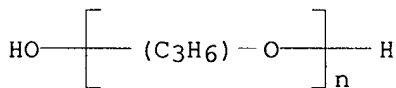


1/3 Nd(III)

IT 25322-69-4P, Propylene oxide homopolymer  
RL: PREP (Preparation)  
(prepn. of, polymn. catalysts for)

RN 25322-69-4 HCAPLUS

CN Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy- (9CI)  
(CA INDEX NAME)



L28 ANSWER 31 OF 38 HCAPLUS COPYRIGHT 2001 ACS

AN 1992:21514 HCAPLUS

DN 116:21514

TI Kinetic study of **ring-opening** polymerization of **alkylene oxide** based on rare earth coordination catalysts

AU Peng, Jiande; Zhang, Yifeng; Shen, Zhiquan

CS Zhejiang Univ., Hangzhou, 310027, Peop. Rep. China

SO Gaofenzi Xuebao (1991), (2), 184-9  
CODEN: GAXUE9; ISSN: 1000-3304

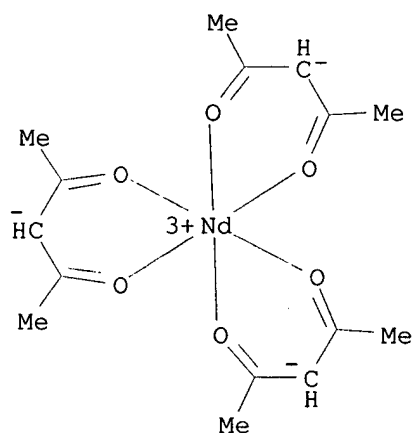
DT Journal

LA Chinese

CC 35-3 (Chemistry of Synthetic High **Polymers**)

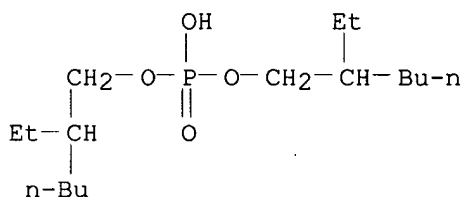
- AB Polymn. of epichlorohydrin (I) or propylene oxide (II) with Nd(P2O4)3-iso-Bu3Al-H2O catalysts follows first-order kinetics with respect to either monomer or catalysts. The activation energy of polymn. of I or II is 48.9 or 61.3 kJ/mol, resp. The polymn. rate is affected by the Al/Nd or H2O/Al ratio and the catalyst compn. The catalytic activity for different catalysts decreases in the order Nd > La > Dy > Yb > Eu; iso-Bu3Al > AlEt3; and for the ligands acetylacetonate > (RO)2P(O)O > R(RO)P(O)O > naphthenic acid radical where R = BuCH<sub>2</sub>CH<sub>2</sub>.
- ST **ring opening** polymn **methyloxirane**  
epichlorohydrin; catalyst kinetics polymn epichlorohydrin; rare earth catalyst kinetics polymn; aluminum catalyst polymn epichlorohydrin; acetylacetonate catalyst polymn epichlorohydrin; naphthenate catalyst polymn epichlorohydrin; phosphonate catalyst polymn epichlorohydrin; propylene oxide polymn kinetics; neodymium catalyst polymn **alkylene oxide**
- IT Rare earth metals, uses  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. triisobutylaluminum and water, for **ring-opening** polymn. of propylene oxide or epichlorohydrin, kinetics in relation to)
- IT Kinetics of polymerization  
(**ring-opening**, of epichlorohydrin or propylene oxide in presence of rare earth metal catalysts)
- IT Polymerization catalysts  
(**ring-opening**, rare earth metal-triisobutylaluminum-water, for propylene oxide or epichlorohydrin, kinetics in relation to)
- IT 97-93-8, Triethylaluminum, uses  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. rare earth compds. and water, for **ring-opening** polymn. of propylene oxide or epichlorohydrin, kinetics in relation to)
- IT 100-99-2, Triisobutylaluminum, uses  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. rare earth metal complex and water, for **ring-opening** polymn. of propylene oxide or epichlorohydrin, kinetics in relation to)
- IT 7732-18-5, Water, uses  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. triisobutylaluminum and rare earth metal complex, for **ring-opening** polymn. of propylene oxide or epichlorohydrin, kinetics in relation to)
- IT 7440-00-8D, Neodymium, naphthenates **14589-38-9**  
**38326-04-4 38326-05-5 45324-92-3**  
**45324-95-6 79321-05-4 79950-28-0**  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. triisobutylaluminum and water, for **ring-opening** polymn. of propylene oxide or epichlorohydrin, kinetics in relation to)
- IT 75-56-9, reactions **106-89-8**, Epichlorohydrin, reactions  
RL: RCT (Reactant)  
(**ring-opening** polymn. of, rare earth metal catalysts for, kinetics in relation to)
- IT **14589-38-9 38326-04-4 38326-05-5**  
**45324-92-3 45324-95-6 79321-05-4**  
**79950-28-0**  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. triisobutylaluminum and water, for **ring-opening** polymn. of propylene oxide or epichlorohydrin, kinetics in relation to)
- RN **14589-38-9** HCAPLUS

CN Neodymium, tris(2,4-pentanedionato-.kappa.O,.kappa.O')-, (OC-6-11)- (9CI)  
(CA INDEX NAME)



RN 38326-04-4 HCAPLUS

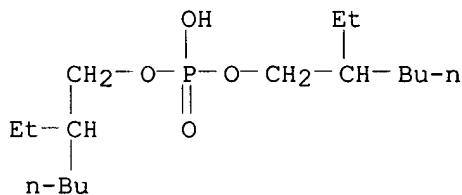
CN Phosphoric acid, bis(2-ethylhexyl) ester, neodymium(3+) salt (9CI) (CA  
INDEX NAME)



●1/3 Nd(III)

RN 38326-05-5 HCAPLUS

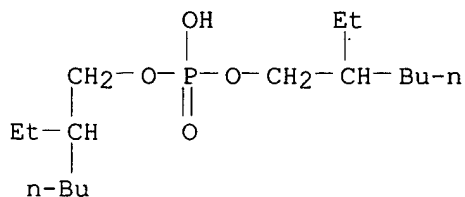
CN Phosphoric acid, bis(2-ethylhexyl) ester, ytterbium(3+) salt (9CI) (CA  
INDEX NAME)



●1/3 Yb(III)

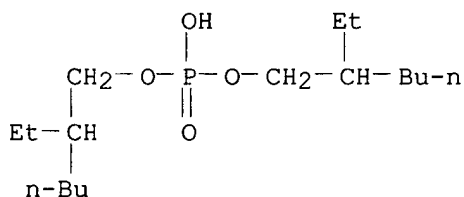
RN 45324-92-3 HCAPLUS

CN Phosphoric acid, bis(2-ethylhexyl) ester, dysprosium(3+) salt (9CI) (CA  
INDEX NAME)



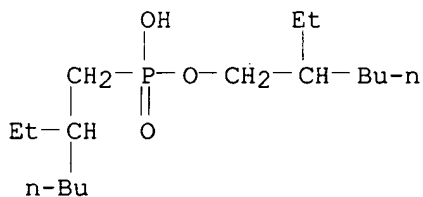
● 1/3 Dy(III)

RN 45324-95-6 HCAPLUS  
 CN Phosphoric acid, bis(2-ethylhexyl) ester, lanthanum(3+) salt (9CI) (CA INDEX NAME)



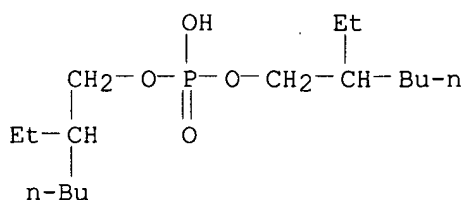
● 1/3 La(III)

RN 79321-05-4 HCAPLUS  
 CN Phosphonic acid, (2-ethylhexyl)-, mono(2-ethylhexyl) ester, neodymium(3+) salt (9CI) (CA INDEX NAME)



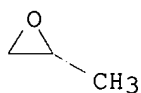
● 1/3 Nd(III)

RN 79950-28-0 HCAPLUS  
 CN Phosphoric acid, bis(2-ethylhexyl) ester, europium(3+) salt (9CI) (CA INDEX NAME)

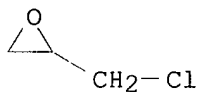


● 1/3 Eu(III)

IT 75-56-9, reactions 106-89-8, Epichlorohydrin, reactions  
 RL: RCT (Reactant)  
 (ring-opening polymn. of, rare earth metal  
 catalysts for, kinetics in relation to)  
 RN 75-56-9 HCAPLUS  
 CN Oxirane, methyl- (9CI) (CA INDEX NAME)



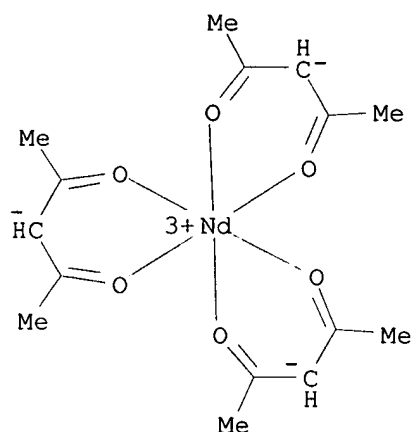
RN 106-89-8 HCAPLUS  
 CN Oxirane, (chloromethyl)- (9CI) (CA INDEX NAME)



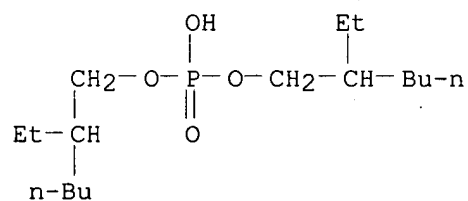
L28 ANSWER 32 OF 38 HCAPLUS COPYRIGHT 2001 ACS  
 AN 1991:123110 HCAPLUS  
 DN 114:123110  
 TI **Ring opening** polymerization of propylene sulfide by  
 rare earth coordination catalysts  
 AU Shen, Zhiquan; Zhang, Yifeng; Peng, Jiande; Ling, Long  
 CS Dep. Chem., Zhejiang Univ., Hangzhou, 310027, Peop. Rep. China  
 SO Sci. China, Ser. B (1990), 33(5), 553-61  
 CODEN: SCBSE5  
 DT Journal  
 LA English  
 CC 35-3 (Chemistry of Synthetic High **Polymers**)  
 AB Ternary catalysts contg. phosphonate, naphthenate, or acetylacetonate rare  
 earth compd., trialkylaluminum, and water were effective for the  
**ring-opening** polymn. of propylene sulfide. The polymn.  
 in PhMe was homogeneous. Poly(propylene sulfide) (I) with mol. wt. of  
 several million was obtained in high yield. The polymn. rate was first  
 order with respect to both monomer and catalyst concns. The activation  
 energy of polymn. was 61.4 kJ/mol. I was characterized by <sup>13</sup>C-NMR, x-ray  
 diffraction, gel-permeation chromatog., and DSC.  
 ST propylene sulfide polymn catalyst kinetics; rare earth catalyst polymn  
 propylene sulfide; polythiopropylene prepn rare earth catalyst  
 IT Kinetics of polymerization



- (coordination, **ring-opening**, of propylene sulfide, in presence of rare earth-trialkylaluminum-water catalysts)
- IT Polymerization catalysts  
(coordination, **ring-opening**, rare earth compds. contg. trialkylaluminum and water, for propylene sulfide)
- IT Naphthenic acids, compounds  
RL: CAT (Catalyst use); USES (Uses)  
(neodymium salts, catalysts, contg. trialkylaluminum and water, for **ring-opening** polymn. of propylene sulfide)
- IT Polyethers, preparation  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(thio-, prepn. of, in presence of rare earth-water-trialkylaluminum catalysts)
- IT 97-93-8, Triethylaluminum, uses and miscellaneous 100-99-2, Triisobutylaluminum, uses and miscellaneous  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. rare earth compds. and water, for **ring-opening** polymn. of propylene sulfide)
- IT 7732-18-5, Water, uses and miscellaneous  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. trialkylaluminum and rare earth compds. and, for **ring-opening** polymn. of propylene sulfide)
- IT 7440-00-8D, Neodymium, naphthenates 14589-38-9  
38326-04-4 38326-05-5 45324-92-3  
45324-94-5 45324-95-6 45324-97-8  
79321-05-4 79950-28-0 79950-29-1  
79950-31-5 79950-32-6  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. trialkylaluminum and water, for **ring-opening** polymn. of propylene sulfide)
- IT 1072-43-1, Propylene sulfide  
RL: RCT (Reactant)  
(polymn. of, **ring-opening**, in presence of rare earth and trialkylaluminum catalysts, kinetics of)
- IT 9064-17-9P, Poly[thio(methyl-1,2-ethanediy)] 25037-97-2P, Propylene sulfide homopolymer  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. of, in presence of rare earth and trialkylaluminum catalysts)
- IT 14589-38-9 38326-04-4 38326-05-5  
45324-92-3 45324-94-5 45324-95-6  
45324-97-8 79321-05-4 79950-28-0  
79950-29-1 79950-31-5 79950-32-6  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. trialkylaluminum and water, for **ring-opening** polymn. of propylene sulfide)
- RN 14589-38-9 HCAPLUS
- CN Neodymium, tris(2,4-pentanedionato-.kappa.O,.kappa.O')-, (OC-6-11)- (9CI)  
(CA INDEX NAME)

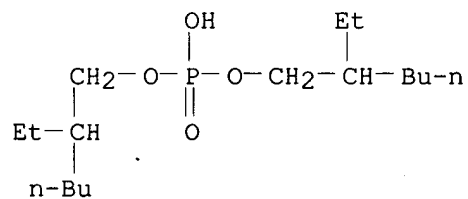


RN 38326-04-4 HCAPLUS  
 CN Phosphoric acid, bis(2-ethylhexyl) ester, neodymium(3+) salt (9CI) (CA INDEX NAME)



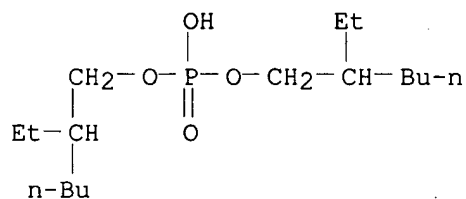
● 1/3 Nd(III)

RN 38326-05-5 HCAPLUS  
 CN Phosphoric acid, bis(2-ethylhexyl) ester, ytterbium(3+) salt (9CI) (CA INDEX NAME)



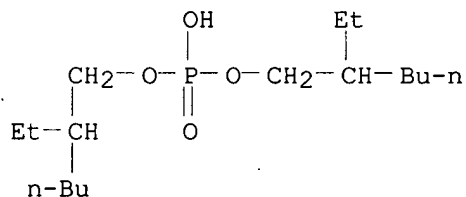
● 1/3 Yb(III)

RN 45324-92-3 HCAPLUS  
 CN Phosphoric acid, bis(2-ethylhexyl) ester, dysprosium(3+) salt (9CI) (CA INDEX NAME)



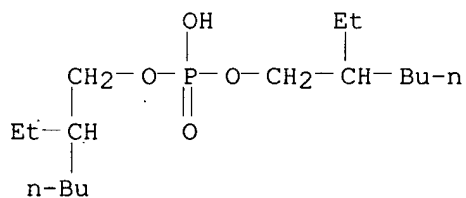
● 1/3 Dy(III)

RN 45324-94-5 HCAPLUS  
 CN Phosphoric acid, bis(2-ethylhexyl) ester, holmium(3+) salt (9CI) (CA INDEX NAME)



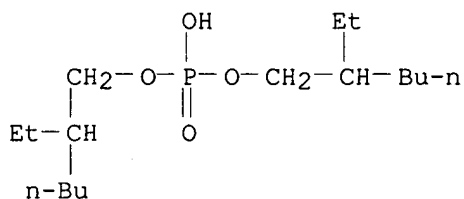
● 1/3 Ho(III)

RN 45324-95-6 HCAPLUS  
 CN Phosphoric acid, bis(2-ethylhexyl) ester, lanthanum(3+) salt (9CI) (CA INDEX NAME)



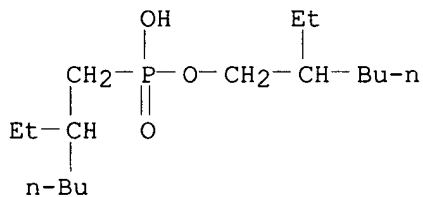
● 1/3 La(III)

RN 45324-97-8 HCAPLUS  
 CN Phosphoric acid, bis(2-ethylhexyl) ester, praseodymium(3+) salt (9CI) (CA INDEX NAME)



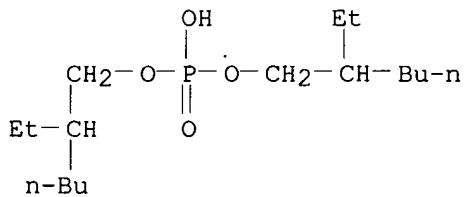
● 1/3 Pr(III)

RN 79321-05-4 HCAPLUS  
 CN Phosphonic acid, (2-ethylhexyl)-, mono(2-ethylhexyl) ester, neodymium(3+) salt (9CI) (CA INDEX NAME)



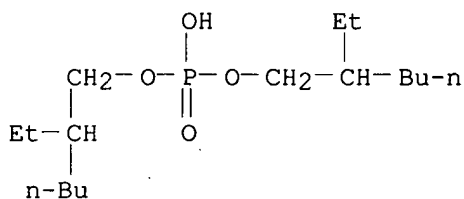
● 1/3 Nd(III)

RN 79950-28-0 HCAPLUS  
 CN Phosphoric acid, bis(2-ethylhexyl) ester, europium(3+) salt (9CI) (CA INDEX NAME)



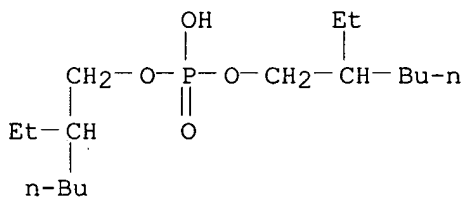
● 1/3 Eu(III)

RN 79950-29-1 HCAPLUS  
 CN Phosphoric acid, bis(2-ethylhexyl) ester, gadolinium(3+) salt (9CI) (CA INDEX NAME)



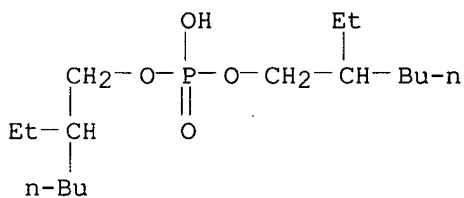
● 1/3 Gd(III)

RN 79950-31-5 HCAPLUS  
 CN Phosphoric acid, bis(2-ethylhexyl) ester, erbium(3+) salt (9CI) (CA INDEX NAME)



● 1/3 Er(III)

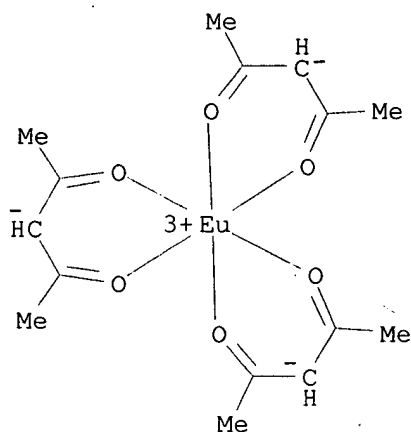
RN 79950-32-6 HCAPLUS  
 CN Phosphoric acid, bis(2-ethylhexyl) ester, lutetium(3+) salt (9CI) (CA INDEX NAME)



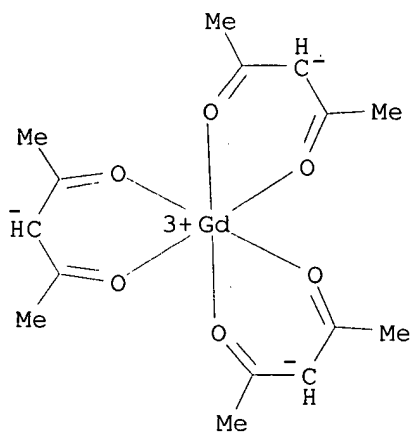
● 1/3 Lu(III)

L28 ANSWER 33 OF 38 HCAPLUS COPYRIGHT 2001 ACS  
 AN 1990:424577 HCAPLUS  
 DN 113:24577  
 TI New catalyst systems of rare earth acetylacetonate/partially hydrolyzed triethylaluminum (AlEt<sub>3</sub>-1/2H<sub>2</sub>O) for polymerization of propylene oxide  
 AU Wu, Jian; Shen, Zhiqun  
 CS Chem. Dep., Zhejiang Univ., Hangzhou, Peop. Rep. China  
 SO J. Polym. Sci., Part A: Polym. Chem. (1990), 28(7), 1995-7  
 CODEN: JPACEC; ISSN: 0887-624X

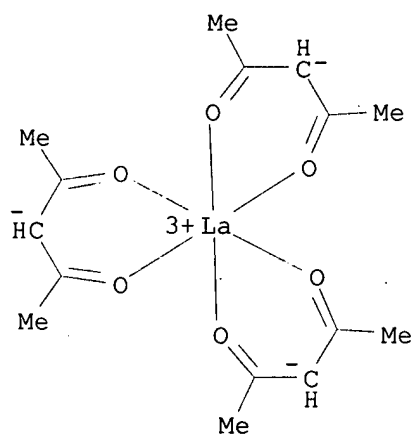
DT Journal  
LA English  
CC 35-3 (Chemistry of Synthetic High Polymers)  
Section cross-reference(s): 36  
AB Coordination compds. of  $\text{AlEt}_3 \cdot 0.5\text{H}_2\text{O}$  with acetylacetonates of 10 rare earth metals were used as polymn. catalysts for propylene oxide (I). The Al-rare earth ratio influenced both the yield and mol. wt. of the I polymer. The light rare-earth co-ordination catalysts yielded very high-mol.-wt. poly-I samples; coordination complexes with Nd were the most potent. Rates of polymn., and optimum polymn. conditions for the catalyst system based on Nd were presented. NMR anal. showed the cryst. fraction of the resulting poly-I to be highly isotactic; the presence of almost pure head-to-tail polymer suggested a **.beta.-opening** of the **oxirane ring**.  
ST acetylacetonate rare earth polymn catalyst; ethyl aluminum coordination polymn catalyst; propylene oxide polymn rare earth; neodymium ethyl aluminum polymn catalyst  
IT Polymerization catalysts  
(rare earth metal acetylacetonate-triethylaluminum, for propylene oxide)  
IT Rare earth metals, compounds  
RL: CAT (Catalyst use); USES (Uses)  
(acetylacetone complexes, catalysts, contg. hydrolyzed triethylaluminum, for polymn. of propylene oxide)  
IT 97-93-8, Triethyl aluminum, uses and miscellaneous  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. rare earth metal acetylacetonates, for polymn. of propylene oxide)  
IT 14284-86-7 14284-87-8 14284-88-9  
14284-98-1 14553-09-4 14589-33-4  
14589-38-9 14589-42-5 14637-88-8  
15554-47-9, Yttrium acetylacetonate  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. triethylaluminum, for polymn. of propylene oxide)  
IT 26046-17-3P, Isotactic poly(propylene oxide)  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. of, from rare earth metal acetylacetonate-triethylaluminum catalysts)  
IT 14284-86-7 14284-87-8 14284-88-9  
14284-98-1 14553-09-4 14589-33-4  
14589-38-9 14589-42-5 14637-88-8  
15554-47-9, Yttrium acetylacetonate  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. triethylaluminum, for polymn. of propylene oxide)  
RN 14284-86-7 HCAPLUS  
CN Europium, tris(2,4-pentanedionato-.kappa.O,.kappa.O')-, (OC-6-11)- (9CI)  
(CA INDEX NAME)



RN 14284-87-8 HCAPLUS  
 CN Gadolinium, tris(2,4-pentanedionato-.kappa.O,.kappa.O')-, (OC-6-11)- (9CI)  
 (CA INDEX NAME)

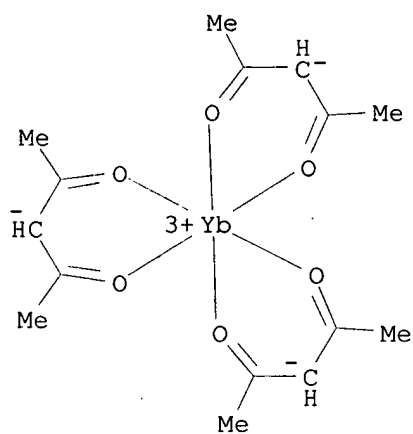


RN 14284-88-9 HCAPLUS  
 CN Lanthanum, tris(2,4-pentanedionato-.kappa.O,.kappa.O')-, (OC-6-11)- (9CI)  
 (CA INDEX NAME)



RN 14284-98-1 HCAPLUS

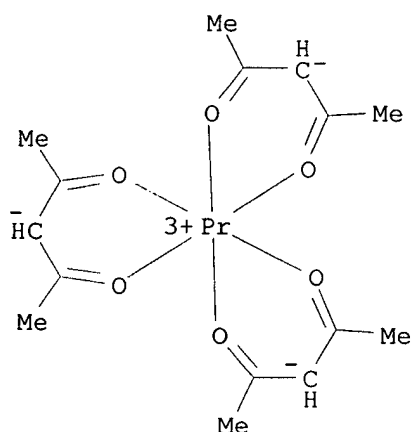
CN Ytterbium, tris(2,4-pentanedionato-.kappa.O,.kappa.O')-, (OC-6-11)- (9CI)  
(CA INDEX NAME)



RN 14553-09-4 HCAPLUS

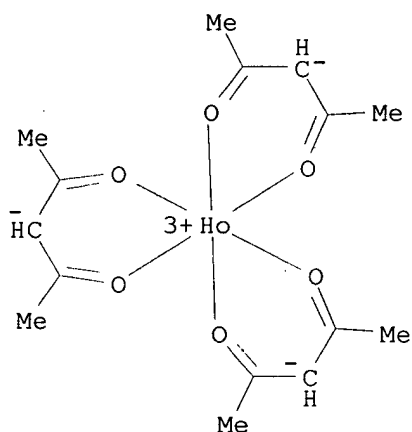
CN Praseodymium, tris(2,4-pentanedionato-.kappa.O,.kappa.O')-, (OC-6-11)-  
(9CI) (CA INDEX NAME)





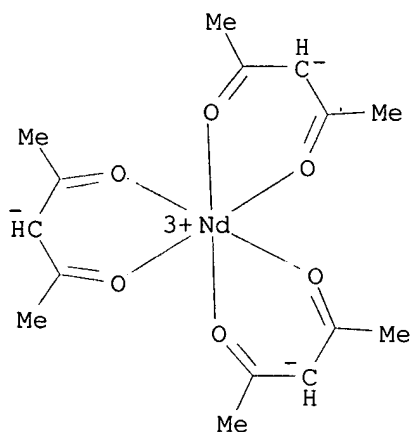
RN 14589-33-4 HCAPLUS

CN Holmium, tris(2,4-pentanedionato-.kappa.O,.kappa.O')-, (OC-6-11)- (9CI)  
(CA INDEX NAME)



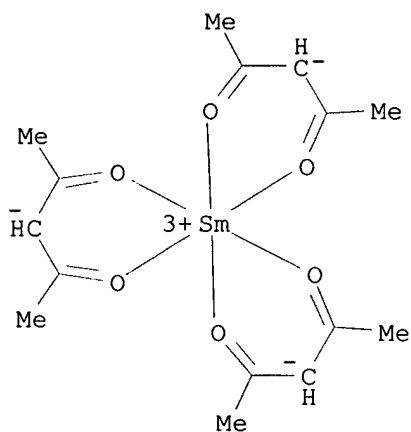
RN 14589-38-9 HCAPLUS

CN Neodymium, tris(2,4-pentanedionato-.kappa.O,.kappa.O')-, (OC-6-11)- (9CI)  
(CA INDEX NAME)



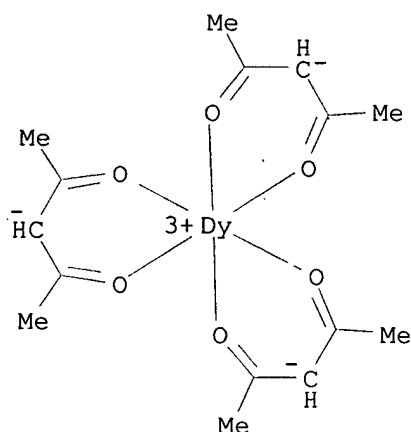
RN 14589-42-5 HCAPLUS

CN Samarium, tris(2,4-pentanedionato-κO,κO')-, (OC-6-11)- (9CI)  
(CA INDEX NAME)

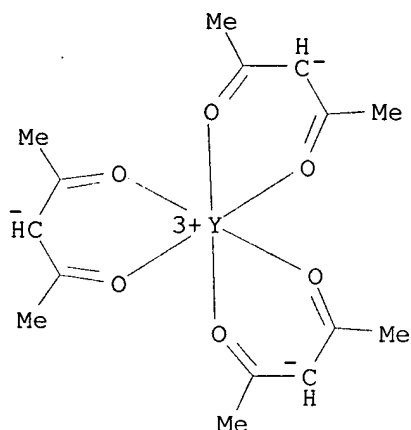


RN 14637-88-8 HCAPLUS

CN Dysprosium, tris(2,4-pentanedionato-κO,κO')-, (OC-6-11)- (9CI)  
(CA INDEX NAME)

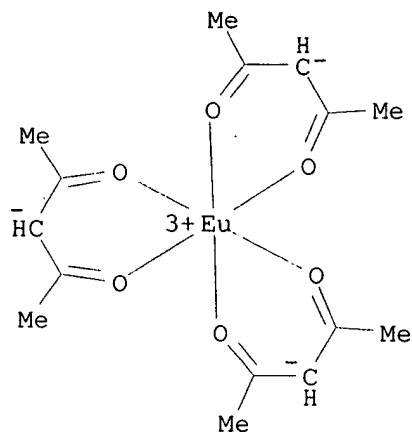


RN 15554-47-9 HCAPLUS  
 CN Yttrium, tris(2,4-pentanedionato-.kappa.O,.kappa.O')-, (OC-6-11)- (9CI)  
 (CA INDEX NAME)



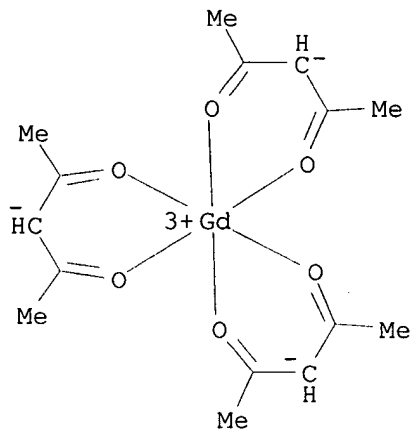
L28 ANSWER 34 OF 38 HCAPLUS COPYRIGHT 2001 ACS  
 AN 1990:424567 HCAPLUS  
 DN 113:24567  
 TI Rare earth coordination catalysts for the polymerization of  
**alkylene oxides**. I. Polymerization of epichlorohydrin  
 AU Wu, Jian; Shen, Zhiquan  
 CS Chem. Dep., Zhejiang Univ., Hangzhou, Peop. Rep. China  
 SO Polym. J. (Tokyo) (1990), 22(4), 326-30  
 CODEN: POLJB8; ISSN: 0032-3896  
 DT Journal  
 LA English  
 CC 35-3 (Chemistry of Synthetic High **Polymers**)  
 AB Acetylacetonates (acac) of 9 rare earth elements, combined with iso-Bu<sub>3</sub>Al and H<sub>2</sub>O, were used as catalysts for the polymn. of epichlorohydrin (I). The Nd(acac)<sub>3</sub>-iso-Bu<sub>3</sub>Al-H<sub>2</sub>O system was a favorable catalyst for polymn. with respect to prepg. polymer with high mol. wt. and low crystallinity. The polymn. of I with Nd(acac)<sub>3</sub> catalyst was investigated concerning the dependence of polymn. catalyst compn., i.e., Al/Nd and H<sub>2</sub>O/Al molar ratios, polymn. time, and solvent, etc. THF polymn. catalyzed by

- Nd(acac)<sub>3</sub> was also performed to check the character of the catalyst system. The bimetallic nature of the catalyst was discussed.
- ST THF epichlorohydrin polymn catalyst; rare earth catalyst polymn
- IT Polyoxyalkylenes, preparation  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. of, catalysts for, contg. rare earth acetylacetonates)
- IT Reactivity ratio in polymerization  
(anionic, **ring-opening**, of allyl glycidyl ether  
with epichlorohydrin and propylene oxide)
- IT Polymerization catalysts  
(anionic, **ring-opening**, rare earth metal  
acetylacetonate-isobutylaluminum-water, for epichlorohydrin)
- IT **14284-86-7**, Tris(acetylacetonato)europium **14284-87-8**,  
Tris(acetylacetonato)gadolinium **14284-88-9**,  
Tris(acetylacetonato)lanthanum **14284-98-1**,  
Tris(acetylacetonato)ytterbium **14553-09-4**,  
Tris(acetylacetonato)praseodymium **14589-38-9**,  
Tris(acetylacetonato)neodymium **14589-42-5**,  
Tris(acetylacetonato)samarium **14637-88-8**,  
Tris(acetylacetonato)dysprosium **15554-47-9**,  
Tris(acetylacetonato)yttrium  
RL: **CAT (Catalyst use)**; USES (Uses)  
(catalysts, contg. isobutylaluminum and water, for polymn. of  
epichlorohydrin)
- IT 7732-18-5, Water, uses and miscellaneous  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. rare earth acetylacetonates and isobutylaluminum,  
for polymn. of epichlorohydrin)
- IT 100-99-2, uses and miscellaneous  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. rare earth acetylacetonates and water, for polymn.  
of epichlorohydrin)
- IT **75-56-9**, reactions **106-89-8**, reactions  
RL: RCT (Reactant)  
(polymn. of, with allyl glycidyl ether, reactivity ratio in)
- IT **106-92-3**  
RL: RCT (Reactant)  
(polymn. of, with epichlorohydrin or propylene oxide, reactivity ratios  
in)
- IT **24969-06-0P**, Polyepichlorohydrin 61710-61-0P,  
Poly[oxy[(chloromethyl)-1,2-ethanediyl]]  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. of, catalysts for)
- IT **14284-86-7**, Tris(acetylacetonato)europium **14284-87-8**,  
Tris(acetylacetonato)gadolinium **14284-88-9**,  
Tris(acetylacetonato)lanthanum **14284-98-1**,  
Tris(acetylacetonato)ytterbium **14553-09-4**,  
Tris(acetylacetonato)praseodymium **14589-38-9**,  
Tris(acetylacetonato)neodymium **14589-42-5**,  
Tris(acetylacetonato)samarium **14637-88-8**,  
Tris(acetylacetonato)dysprosium **15554-47-9**,  
Tris(acetylacetonato)yttrium  
RL: **CAT (Catalyst use)**; USES (Uses)  
(catalysts, contg. isobutylaluminum and water, for polymn. of  
epichlorohydrin)
- RN 14284-86-7 HCAPLUS
- CN Europium, tris(2,4-pentanedionato-.kappa.O,.kappa.O')-, (OC-6-11)- (9CI)  
(CA INDEX NAME)



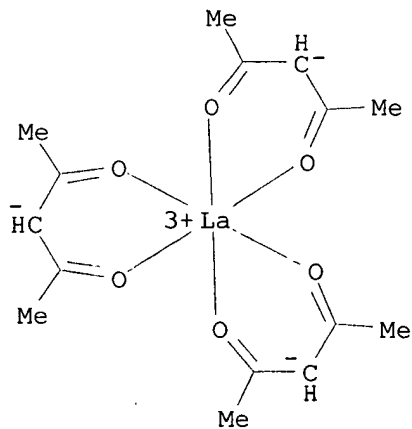
RN 14284-87-8 HCAPLUS

CN Gadolinium, tris(2,4-pentanedionato-.kappa.O,.kappa.O')-, (OC-6-11)- (9CI)  
(CA INDEX NAME)

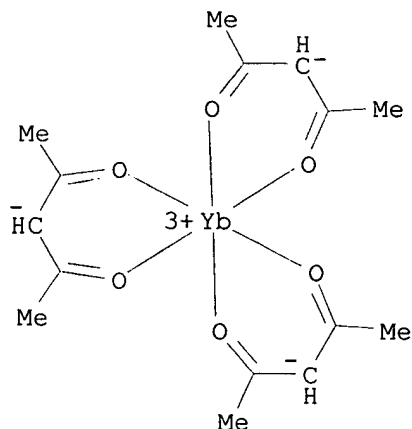


RN 14284-88-9 HCAPLUS

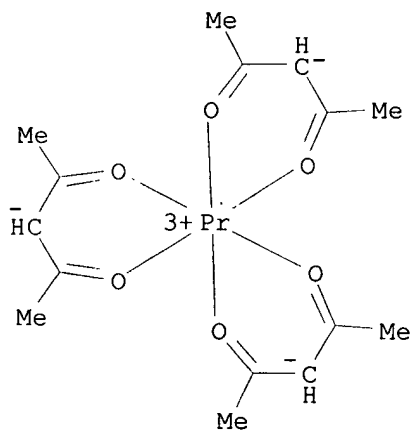
CN Lanthanum, tris(2,4-pentanedionato-.kappa.O,.kappa.O')-, (OC-6-11)- (9CI)  
(CA INDEX NAME)



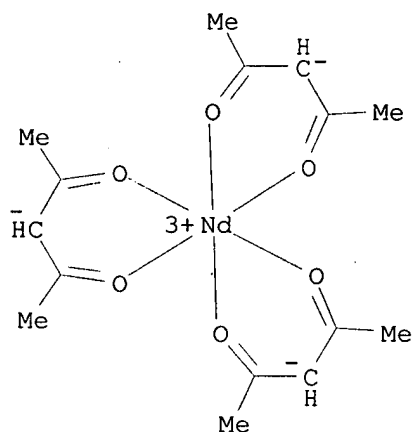
RN 14284-98-1 HCAPLUS  
 CN Ytterbium, tris(2,4-pentanedionato-.kappa.O,.kappa.O')-, (OC-6-11)- (9CI)  
 (CA INDEX NAME)



RN 14553-09-4 HCAPLUS  
 CN Praseodymium, tris(2,4-pentanedionato-.kappa.O,.kappa.O')-, (OC-6-11)-  
 (9CI) (CA INDEX NAME)

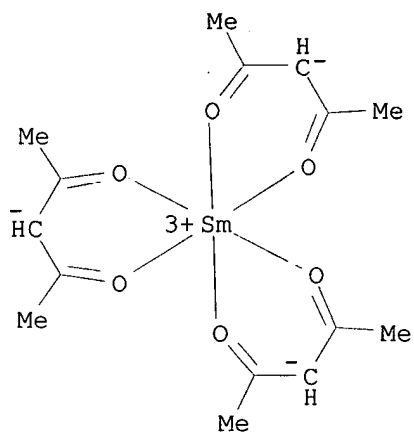


RN 14589-38-9 HCAPLUS  
 CN Neodymium, tris(2,4-pentanedionato-.kappa.O,.kappa.O')-, (OC-6-11)- (9CI)  
 (CA INDEX NAME)



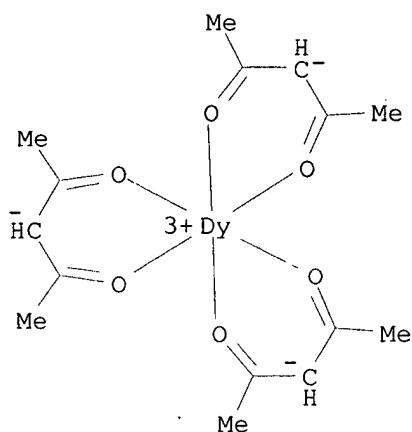
RN 14589-42-5 HCAPLUS

CN Samarium, tris(2,4-pentanedionato-.kappa.O,.kappa.O')-, (OC-6-11)- (9CI)  
(CA INDEX NAME)



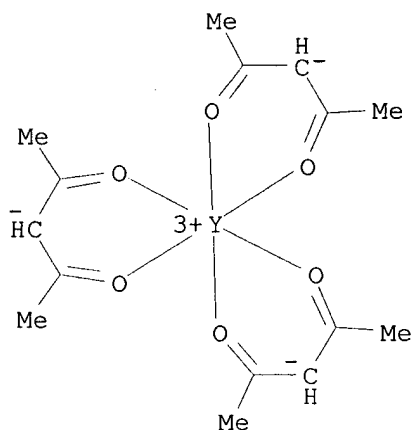
RN 14637-88-8 HCAPLUS

CN Dysprosium, tris(2,4-pentanedionato-.kappa.O,.kappa.O')-, (OC-6-11)- (9CI)  
(CA INDEX NAME)



RN 15554-47-9 HCAPLUS

CN Yttrium, tris(2,4-pentanedionato- $\kappa$ O, $\kappa$ O')-, (OC-6-11)- (9CI)  
(CA INDEX NAME)



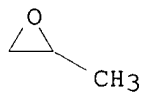
IT 75-56-9, reactions 106-89-8, reactions

RL: RCT (Reactant)

(polymn. of, with allyl glycidyl ether, reactivity ratio in)

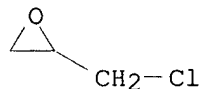
RN 75-56-9 HCAPLUS

CN Oxirane, methyl- (9CI) (CA INDEX NAME)



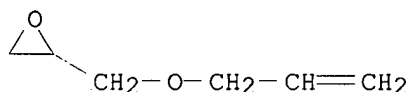
RN 106-89-8 HCAPLUS

CN Oxirane, (chloromethyl)- (9CI) (CA INDEX NAME)

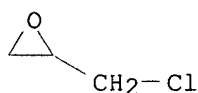




IT 106-92-3  
 RL: RCT (Reactant)  
 (polymn. of, with epichlorohydrin or propylene oxide, reactivity ratios in)  
 RN 106-92-3 HCAPLUS  
 CN Oxirane, [(2-propenyloxy)methyl]- (9CI) (CA INDEX NAME)

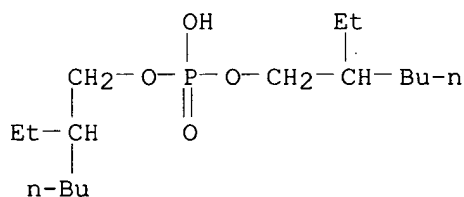


IT 24969-06-0P, Polyepichlorohydrin  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (prepn. of, catalysts for)  
 RN 24969-06-0 HCAPLUS  
 CN Oxirane, (chloromethyl)-, homopolymer (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 106-89-8  
 CMF C3 H5 Cl O



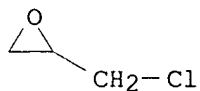
L28 ANSWER 35 OF 38 HCAPLUS COPYRIGHT 2001 ACS  
 AN 1990:56806 HCAPLUS  
 DN 112:56806  
 TI Kinetics and mechanism of **ring-opening** polymerization  
 of epichlorohydrin in the presence of rare earth coordination catalyst  
 system  
 AU Sun, Junquan; Hu, Peizhan; Shen, Zhiquan  
 CS Dep. Chem., Zhejiang Univ., Hangzhou, Peop. Rep. China  
 SO Cuihua Xuebao (1989), 10(3), 301-8  
 CODEN: THHPD3; ISSN: 0253-9837  
 DT Journal  
 LA Chinese  
 CC 35-3 (Chemistry of Synthetic High Polymers)  
 AB The kinetics of **ring-opening** polymn. of  
 epichlorohydrin in the presence of Nd(P204)3-Al(iso-Bu)3-H2O catalyst  
 system was studied. The polymn. rate of propagation was zero order with  
 respect to the monomer concn. and first order with respect to the catalyst  
 concn. The activation energy of polymn. was 37.4 kJ/mol. The initiation  
 step was instantaneous and the termination was a bimol. process in polymn.  
 under the given conditions.  
 ST epichlorohydrin **ring opening** polymn; kinetics  
 epichlorohydrin **ring opening** polymn; mechanism  
 epichlorohydrin **ring opening** polymn; neodymium polymn  
 catalyst epichlorohydrin; aluminum triisobutyl polymn catalyst  
 epichlorohydrin; water polymn catalyst epichlorohydrin  
 IT Polymerization catalysts  
 (**ring-opening**, aluminum-neodymium-water, for  
 epichlorohydrin, kinetics and mechanism in relation to)

- IT Kinetics of polymerization  
(**ring-opening**, of epichlorohydrin, in presence of aluminum-neodymium-water system)
- IT Polymerization  
(**ring-opening**, of epichlorohydrin, in presence of aluminum-neodymium-water system, mechanism of)
- IT 7732-18-5, Water, uses and miscellaneous  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. neodymium and triisobutylaluminum, for **ring-opening** polymn. of epichlorohydrin, kinetics and mechanism in relation to)
- IT 100-99-2, Triisobutylaluminum, uses and miscellaneous  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. neodymium and water, for **ring-opening** polymn. of epichlorohydrin, kinetics and mechanism in relation to)
- IT 38326-04-4  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. triisobutylaluminum and water, for **ring-opening** polymn. of epichlorohydrin, kinetics and mechanism in relation to)
- IT 106-89-8, Epichlorohydrin, reactions  
RL: RCT (Reactant)  
(**ring-opening** polymn. of, in presence of aluminum-neodymium-water system, kinetics and mechanism of)
- IT 38326-04-4  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. triisobutylaluminum and water, for **ring-opening** polymn. of epichlorohydrin, kinetics and mechanism in relation to)
- RN 38326-04-4 HCAPLUS
- CN Phosphoric acid, bis(2-ethylhexyl) ester, neodymium(3+) salt (9CI) (CA INDEX NAME)



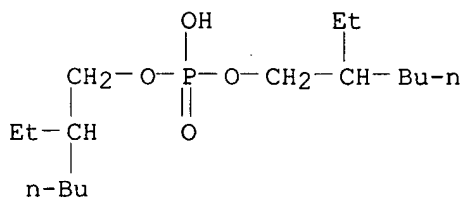
● 1/3 Nd(III)

- IT 106-89-8, Epichlorohydrin, reactions  
RL: RCT (Reactant)  
(**ring-opening** polymn. of, in presence of aluminum-neodymium-water system, kinetics and mechanism of)
- RN 106-89-8 HCAPLUS
- CN Oxirane, (chloromethyl)- (9CI) (CA INDEX NAME)



- L28 ANSWER 36 OF 38 HCAPLUS COPYRIGHT 2001 ACS  
AN 1989:614987 HCAPLUS  
DN 111:214987  
TI **Ethylene oxide** polymerization using rare-earth coordination catalysts  
AU Zhang, Yifeng; Shen, Zhiqun  
CS Dep. Chem., Zhejiang Univ., Hangzhou, Peop. Rep. China  
SO Gaofenzi Xuebao (1988), (6), 469-73  
CODEN: GAXUE9; ISSN: 1000-3304  
DT Journal  
LA Chinese  
CC 35-3 (Chemistry of Synthetic High Polymers)  
AB **Ring-opening** polymn. of **ethylene oxide** (I) was studied using Nd(P2O4)3-Al(iso-Bu)3-water catalyst in PhMe. The catalytic activity of the rare-earth coordination catalyst and viscosity-av. mol. wt. of poly(**ethylene oxide**) were high. The overall polymn. activation energy was 33.8 kJ/mol and the rate equation could be expressed as  $R_p = K_p [I] [Nd(P2O4)_3]$ , where  $K_p = 1.67 \cdot \text{times} \cdot 10^{-3} \text{ mol}^{-1} \text{ s}^{-1}$ .  
ST neodymium polymn catalyst **oxirane**; aluminum triisobutyl polymn catalyst **oxirane**; water polymn catalyst **oxirane**; polyoxyethylene prepn catalyst neodymium; kinetics polymn **oxirane** neodymium; phosphonate neodymium polymn catalyst **oxirane**  
IT Polymerization catalysts  
(**ring-opening**, neodymium bis(ethylhexyl) phosphonate-triisobutylaluminum-water, for **ethylene oxide**, kinetics in relation to)  
IT Kinetics of polymerization  
(**ring-opening**, of **ethylene oxide**, in presence of neodymium bis(ethylhexyl) phosphonate-triisobutylaluminum-water systems)  
IT 7732-18-5, Water, uses and miscellaneous  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. neodymium bis(ethylhexyl) phosphonate and triisobutylaluminum, for **ring-opening** polymn. of ethylene, kinetics in relation to)  
IT 100-99-2, Triisobutylaluminum, uses and miscellaneous  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. neodymium bis(ethylhexyl) phosphonate and water, for **ring-opening** polymn. of ethylene, kinetics in relation to)  
IT 38326-04-4  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. triisobutylaluminum and water, for **ring-opening** polymn. of ethylene, kinetics in relation to)  
IT 75-21-8, **Ethylene oxide**, reactions  
RL: RCT (Reactant)  
(polymn. of, **ring-opening**, in presence of neodymium bis(ethylhexyl) phosphonate-triisobutylaluminum-water systems, kinetics of)  
IT 25322-68-3P, Poly(**ethylene oxide**)  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. of, catalysts for, neodymium bis(ethylhexyl) phosphonate-triisobutylaluminum-water system as)  
IT 38326-04-4  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. triisobutylaluminum and water, for **ring-opening** polymn. of ethylene, kinetics in relation to)

RN 38326-04-4 HCAPLUS  
 CN Phosphoric acid, bis(2-ethylhexyl) ester, neodymium(3+) salt (9CI) (CA INDEX NAME)



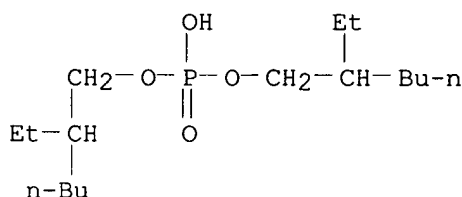
● 1/3 Nd(III)

IT 75-21-8, **Ethylene oxide**, reactions  
 RL: RCT (Reactant)  
 (polymn. of, **ring-opening**, in presence of neodymium  
 bis(ethylhexyl) phosphonate-triisobutylaluminum-water systems, kinetics  
 of)  
 RN 75-21-8 HCAPLUS  
 CN Oxirane (9CI) (CA INDEX NAME)



L28 ANSWER 37 OF 38 HCAPLUS COPYRIGHT 2001 ACS  
 AN 1989:193446 HCAPLUS  
 DN 110:193446  
 TI **Ring opening** polymerization of **ethylene oxide** by the Y(P204)3-triisobutylaluminum-water catalyst  
 AU Zhang, Yifeng; Chen, Xianhai; Shen, Zhiquan  
 CS Dep. Chem., Zhejiang Univ., Hangzhou, Peop. Rep. China  
 SO Inorg. Chim. Acta (1989), 155(2), 263-5  
 CODEN: ICHAA3; ISSN: 0020-1693  
 DT Journal  
 LA English  
 CC 35-3 (Chemistry of Synthetic High **Polymers**)  
 AB The title polymn. activity is strongly dependent upon the molar ratio of the 3 components in the catalyst and polymn. conditions. This catalyst gives high-mol.-wt. poly(**ethylene oxide**) with a high reaction rate and a high yield. The poly(**ethylene oxide**) was characterized by IR spectrophotometry, DSC, and x-ray diffraction.  
 ST **ethylene oxide** polymn catalyst; yttrium phosphorus isobutylaluminum water catalyst; polyoxyethylene prepn catalyst  
 IT Polymerization catalysts  
 (ring-opening, yttrium phosphate-triisobutylaluminum-water, for **ethylene oxide**)  
 IT 38326-06-6  
 RL: CAT (Catalyst use); USES (Uses)  
 (catalysts, contg. triisobutylaluminum and water, for **ring-opening** polymn. of **ethylene oxide**)  
 IT 7732-18-5, Water, uses and miscellaneous  
 RL: CAT (Catalyst use); USES (Uses)

- (catalysts, contg. yttrium phosphate and triisobutylaluminum, for ring-opening polymn. of **ethylene oxide**)
- IT 100-99-2, Triisobutylaluminum, uses and miscellaneous  
 RL: CAT (Catalyst use); USES (Uses)  
 (catalysts, contg. yttrium phosphate and water, for ring-opening polymn. of **ethylene oxide**)
- IT 25322-68-3P, Poly(**ethylene oxide**)  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (prepn. of, catalysts for, yttrium phosphate-triisobutylaluminum-water system as)
- IT 38326-06-6  
 RL: CAT (Catalyst use); USES (Uses)  
 (catalysts, contg. triisobutylaluminum and water, for ring-opening polymn. of **ethylene oxide**)
- RN 38326-06-6 HCAPLUS
- CN Phosphoric acid, bis(2-ethylhexyl) ester, yttrium(3+) salt (9CI) (CA INDEX NAME)



● 1/3 Y(III)

- L28 ANSWER 37 OF 38 HCAPLUS COPYRIGHT 2001 ACS
- AN 1989:193446 HCAPLUS
- DN 110:193446
- TI **Ring opening polymerization of ethylene oxide** by the Y(P204)3-triisobutylaluminum-water catalyst
- AU Zhang, Yifeng; Chen, Xianhai; Shen, Zhiquan
- CS Dep. Chem., Zhejiang Univ., Hangzhou, Peop. Rep. China
- SO Inorg. Chim. Acta (1989), 155(2), 263-5  
 CODEN: ICHAA3; ISSN: 0020-1693
- DT Journal
- LA English
- CC 35-3 (Chemistry of Synthetic High **Polymers**)
- AB The title polymn. activity is strongly dependent upon the molar ratio of the 3 components in the catalyst and polymn. conditions. This catalyst gives high-mol.-wt. poly(**ethylene oxide**) with a high reaction rate and a high yield. The poly(**ethylene oxide**) was characterized by IR spectrophotometry, DSC, and x-ray diffraction.
- ST **ethylene oxide** polymn catalyst; yttrium phosphorus isobutylaluminum water catalyst; polyoxyethylene prep catalyst
- IT Polymerization catalysts  
 (ring-opening, yttrium phosphate-triisobutylaluminum-water, for **ethylene oxide**)
- IT 38326-06-6  
 RL: CAT (Catalyst use); USES (Uses)  
 (catalysts, contg. triisobutylaluminum and water, for ring-

opening polymn. of ethylene oxide)

IT 7732-18-5, Water, uses and miscellaneous  
 RL: CAT (Catalyst use); USES (Uses)  
 (catalysts, contg. yttrium phosphate and triisobutylaluminum, for ring-opening polymn. of ethylene oxide)

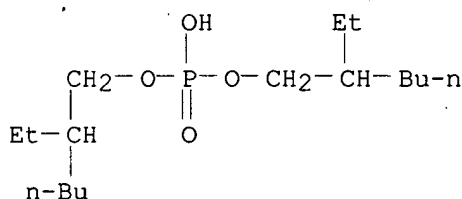
IT 100-99-2, Triisobutylaluminum, uses and miscellaneous  
 RL: CAT (Catalyst use); USES (Uses)  
 (catalysts, contg. yttrium phosphate and water, for ring-opening polymn. of ethylene oxide)

IT 25322-68-3P, Poly(ethylene oxide)  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (prepn. of, catalysts for, yttrium phosphate-triisobutylaluminum-water system as)

IT 38326-06-6  
 RL: CAT (Catalyst use); USES (Uses)  
 (catalysts, contg. triisobutylaluminum and water, for ring-opening polymn. of ethylene oxide)

RN 38326-06-6 HCAPLUS

CN Phosphoric acid, bis(2-ethylhexyl) ester, yttrium(3+) salt (9CI) (CA INDEX NAME)



● 1/3 Y(III)

COMMAND INTERRUPTED  
 REENTER FILE 'HCAPLUS'  
 AND TRY AGAIN, OR ENTER '?' FOR MORE INFORMATION.

Your command did not complete due to a temporary system problem. To recover, reenter the file you are in now. Then, any command that is normally available to you may be used. No cost summary for the current file will be displayed. After reentering the current file you may retry your command. Also, you may wish to SAVE your search query. This can be done in any file. If you cannot access your current file, or if your command fails a second time, notify the Help Desk. Enter "HELP STN" for information on contacting the nearest STN Help Desk by telephone or by using the SEND command in STNMAIL file.

=>

IS NOT A RECOGNIZED COMMAND  
 The previous command name entered was not recognized by the system. For a list of commands available to you in the current file, enter "HELP COMMANDS" at an arrow prompt (=>).

=>

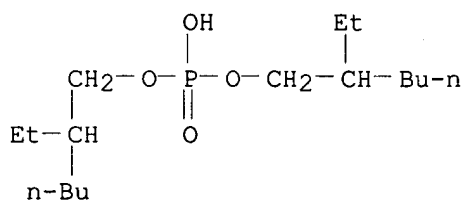
IS NOT A RECOGNIZED COMMAND

The previous command name entered was not recognized by the system.  
For a list of commands available to you in the current file, enter  
"HELP COMMANDS" at an arrow prompt (=>).

=>

=> D L28 37-38 ALL HITSTR

L28 ANSWER 37 OF 38 HCAPLUS COPYRIGHT 2001 ACS  
AN 1989:193446 HCAPLUS  
DN 110:193446  
TI **Ring opening** polymerization of **ethylene oxide** by the Y(P204)3-triisobutylaluminum-water catalyst  
AU Zhang, Yifeng; Chen, Xianhai; Shen, Zhiquan  
CS Dep. Chem., Zhejiang Univ., Hangzhou, Peop. Rep. China  
SO Inorg. Chim. Acta (1989), 155(2), 263-5  
CODEN: ICHAA3; ISSN: 0020-1693  
DT Journal  
LA English  
CC 35-3 (Chemistry of Synthetic High **Polymers**)  
AB The title polymn. activity is strongly dependent upon the molar ratio of the 3 components in the catalyst and polymn. conditions. This catalyst gives high-mol.-wt. poly(**ethylene oxide**) with a high reaction rate and a high yield. The poly(**ethylene oxide**) was characterized by IR spectrophotometry, DSC, and x-ray diffraction.  
ST **ethylene oxide** polymn catalyst; yttrium phosphorus isobutylaluminum water catalyst; polyoxyethylene prepn catalyst  
IT Polymerization catalysts  
(**ring-opening**, yttrium phosphate-triisobutylaluminum-water, for **ethylene oxide**)  
IT 38326-06-6  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. triisobutylaluminum and water, for **ring-opening** polymn. of **ethylene oxide**)  
IT 7732-18-5, Water, uses and miscellaneous  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. yttrium phosphate and triisobutylaluminum, for **ring-opening** polymn. of **ethylene oxide**)  
IT 100-99-2, Triisobutylaluminum, uses and miscellaneous  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. yttrium phosphate and water, for **ring-opening** polymn. of **ethylene oxide**)  
IT 25322-68-3P, Poly(**ethylene oxide**)  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. of, catalysts for, yttrium phosphate-triisobutylaluminum-water system as)  
IT 38326-06-6  
RL: CAT (Catalyst use); USES (Uses)  
(catalysts, contg. triisobutylaluminum and water, for **ring-opening** polymn. of **ethylene oxide**)  
RN 38326-06-6 HCAPLUS  
CN Phosphoric acid, bis(2-ethylhexyl) ester, yttrium(3+) salt (9CI) (CA INDEX NAME)



● 1/3 Y(III)

L28 ANSWER 38 OF 38 HCAPLUS COPYRIGHT 2001 ACS

AN 1971:43074 HCAPLUS

DN 74:43074

TI Cationic polymerization of polymerizable monomers by use of latent catalysts

IN Kropp, James E.; Allen, Michael George; Warren, George W. B.

PA Minnesota Mining and Manufg. Co.

SO Ger. Offen., 42 pp.

CODEN: GWXXBX

DT Patent

LA German

IC C08F

CC 36 (Plastics Manufacture and Processing)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 2012013		19701008		
PRAI	US		19690314		
AB	Olefinic or <b>ring-opening</b> monomers contg. N or O are polymd. using latent polymn. catalysts, which are noncorrosive toward metals and can be activated by heat or uv irradiation, and comprise bis(trifluoromethylsulfonyl) compds., their amine or metal salts, or their clathrate compds. Thus, bisphenol A diglycidyl ether contg. 5% (CF <sub>3</sub> SO <sub>2</sub> ) <sub>2</sub> CHAg hardened in 15 min when exposed to uv light, but hardened in 1 month at room temp. Other monomers polymd. include novolak vinyl ethers, diethylene glycol divinyl ether, N-vinylpyrrolidinone, trioxane, N-(carbethoxymethyl)aziridine, and bis(3,4- <b>epoxy</b> -6-methylcyclohexylmethyl) adipate. Among the latent curing catalysts used in 32 examples are: (CF <sub>3</sub> SO <sub>2</sub> ) <sub>2</sub> CHK, [(CF <sub>3</sub> SO <sub>2</sub> ) <sub>2</sub> CH] <sub>2</sub> Ni, (CF <sub>3</sub> SO <sub>2</sub> ) <sub>2</sub> CH <sub>2</sub> (I), the clathrate of I with Dianin's compd., and the guanidine, pyridine, and Et <sub>3</sub> N salts of I. Accelerators include 2,4-tolylene diisocyanate and bis[3-tertbutyl-5-methyl-2-(phenylcarbamoyloxy)phenyl]methane.				
ST	cationic polymn <b>epoxides</b> ; <b>epoxides</b> cationic polymn; catalysts latent polymn <b>epoxides</b> ; latent catalysts polymn <b>epoxides</b> ; sulfonyl perfluoralkyl catalysts; perfluoralkyl sulfonyl catalysts; vinyl compd polymn; accelerators polymn				
IT	Sulfones RL: USES (Uses) (bis(trifluoromethyl), salts, polymn. catalysts, activated by heat and uv irradiation)				
IT	Polymerization catalysts (bis[(trifluoromethyl)sulfonyl] compds., activated by heat and uv irradiation)				
IT	Crosslinking catalysts (bis[(trifluoromethyl)sulfonyl] compds., for <b>epoxy</b> resins)				



IT Resins, **epoxy**, reactions  
 RL: RCT (Reactant)  
 (crosslinking of, bis[(trifluoromethyl)sulfonyl] compds. as catalysts for)

IT Ethers  
 RL: USES (Uses)  
 (cyclic, polymn. of, bis[(trifluoromethyl)sulfonyl] compds. as catalysts for)

IT Polyoxymethylenes, preparation  
 RL: PREP (Preparation)  
 (from trioxane, bis[(trifluoromethyl)sulfonyl] compds. as catalysts for)

IT Amines, compounds  
 RL: USES (Uses)  
 (salts with bis[(trifluoromethyl)sulfonyl] compds., polymn. catalysts, activated by heat and uv irradiation)

IT Carbanilic acid, esters  
 RL: USES (Uses)  
 (accelerators, for bis[(trifluoromethyl)sulfonyl] polymn. catalysts)

IT Phenol condensation products  
 RL: USES (Uses)  
 (**epoxypropyl** and vinyl ethers, polymn. of, bis[(trifluoromethyl)sulfonyl] compds. as catalysts for)

IT 103-71-9 584-84-9 31323-03-2  
 RL: USES (Uses)  
 (accelerators, for bis[(trifluoromethyl)sulfonyl] polymn. catalysts)

IT 428-76-2 31253-33-5 31322-86-8 31322-87-9 31322-88-0 31322-89-1  
 31322-90-4 **31322-91-5** 31322-93-7 31322-96-0 31322-97-1  
 31322-98-2 31322-99-3 31323-00-9 31323-01-0 31323-02-1  
 33249-12-6  
 RL: **CAT (Catalyst use)**; USES (Uses)  
 (catalysts, for polymn. of **epoxy** compds.)

IT 30354-25-7 30354-38-2 31322-84-6  
 RL: **CAT (Catalyst use)**; USES (Uses)  
 (catalysts, for polymn., activated by heat and uv irradiation)

IT 31322-94-8 31322-95-9  
 RL: USES (Uses)  
 (clathrate, catalysts, for polymn. of **epoxy** compds.)

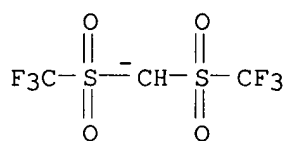
IT 9003-39-8P **25068-38-6P** 25085-98-7P 25086-23-1P 25215-94-5P  
 29616-42-0P 30352-77-3P 31244-41-4P **31244-44-7P**  
 RL: PREP (Preparation)  
 (prepn. of, bis[(trifluoromethyl)sulfonyl] compds. as catalysts for)

IT 29797-71-5P  
 RL: PREP (Preparation)  
 (prepn. of, from ERL 4289, bis[(trifluoromethyl)sulfonyl] compds. as catalysts for)

IT **31322-91-5**  
 RL: **CAT (Catalyst use)**; USES (Uses)  
 (catalysts, for polymn. of **epoxy** compds.)

RN 31322-91-5 HCAPLUS

CN Methane, bis[(trifluoromethyl)sulfonyl]-, ion(1-), samarium(3+) (8CI) (CA INDEX NAME)



1/3 Sm(III) 3+

IT 25068-38-6P 31244-44-7P

RL: PREP (Preparation)

(prepn. of, bis[(trifluoromethyl)sulfonyl] compds. as catalysts for)

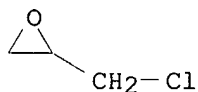
RN 25068-38-6 HCAPLUS

CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 106-89-8

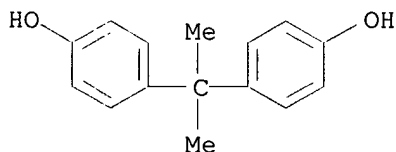
CMF C3 H5 Cl O



CM 2

CRN 80-05-7

CMF C15 H16 O2



RN 31244-44-7 HCAPLUS

CN Hexanedioic acid, bis(oxiranylmethyl) ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 2754-17-8

CMF C12 H18 O6

